			REEWA	( WEAV		-					
Genera	I Informati	on			Site Information						
-		AECO AM			Weaving Seg	Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 1-Bet Copans & Sample Analysis Year 2020 Build 2A					
Inputs	Scription Svv Tol		1								
Weaving n Weaving se Freeway fr	onfiguration umber of lanes, I egment length, L ee-flow speed, F	s FS	r Base Co	4 2380ft 70 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freew 24 Lev		
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)		
V <sub>FF</sub>	4305	0.95	3	0	1.5	1.2	0.985	1.00	4600		
V <sub>RF</sub>	355	0.92	2	0	1.5	1.2	0.990	1.00	390		
V <sub>FR</sub>	790	0.92	2	0	1.5	1.2	0.990	1.00	867		
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0		
V <sub>NW</sub>	4600		4	<b>.</b>	<u>.</u>			V =	5857		
V <sub>W</sub>	1257										
VR	0.215										
Config	uration Cha	aracteris	tics		•						
Minimum r	maneuver lanes,	N <sub>WL</sub>		2 lc	Minimum we	aving lane c	hanges, LC <sub>MIN</sub>		1257 lc		
Interchang	e density, ID			0.7 int/mi	Weaving lan	e changes, L	-C <sub>w</sub>		1692 lc		
Minimum F	RF lane changes	, LC <sub>RF</sub>		1 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		1467 lc		
Minimum F	R lane changes	, LC <sub>FR</sub>		1 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		3159 lc		
Minimum F	RR lane changes	, LC <sub>RR</sub>		lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		76		
Weavir	ng Segmen	t Speed,	Density, I	Level of	Service,	and Cap	oacity				
•	egment flow rate egment capacity			5777 veh/h 8765 veh/h	Weaving inte Weaving seg				0.28 54.7 mp		
	egment v/c ratio	, w		0.659	Average wea	aving speed,	S <sub>w</sub>		57.9 mp		
•	egment density,	D	20		Average nor	-weaving sp	eed, S <sub>NW</sub>		53.9 mp		
Level of Se	ervice, LOS			С	Maximum weaving length, L <sub>MAX</sub>				4686		
Notes					1	-					

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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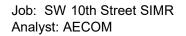
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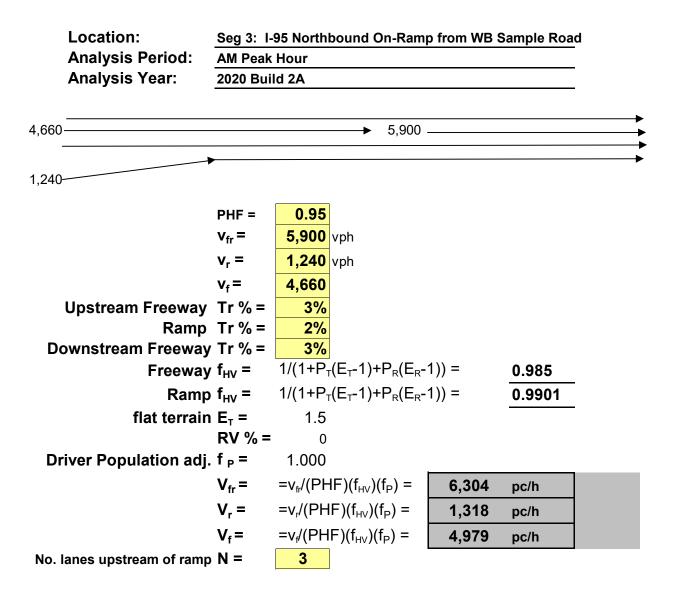
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company	AECOM		Highway/Direction of Travel From/To	I-95 NB Seg 2-Bet Sample	Off & On from
Date Performed Analysis Time Period	AM		Jurisdiction Analysis Year		2A
Project Description SW 10th	h Street SIMR				
✓ Oper.(LOS)			Des.(N)	Plann	ning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4660	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
-			Up/Down %		
Calculate Flow Adjustn	nents				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	1.2 0.985	
	1.0		Calc Speed Adj and FFS		
Speed Inputs				5	
Lane Width		ft			_
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1660 67.5 24.6 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 f -	r <sub>LW</sub> - Exhibit 11-8 F <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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<b>25-7):</b> Maximum	Actual	V/c	LOS F?
ow speed) = 9,600	6,304	0.66	No
speed) = 7,200	4,979	0.69	No
speed) = 2,100	1,318	0.63	No
(	ow speed) = 9,600 speed) = 7,200	ow speed) =9,6006,304speed) =7,2004,979	ow speed) =9,6006,3040.66speed) =7,2004,9790.69

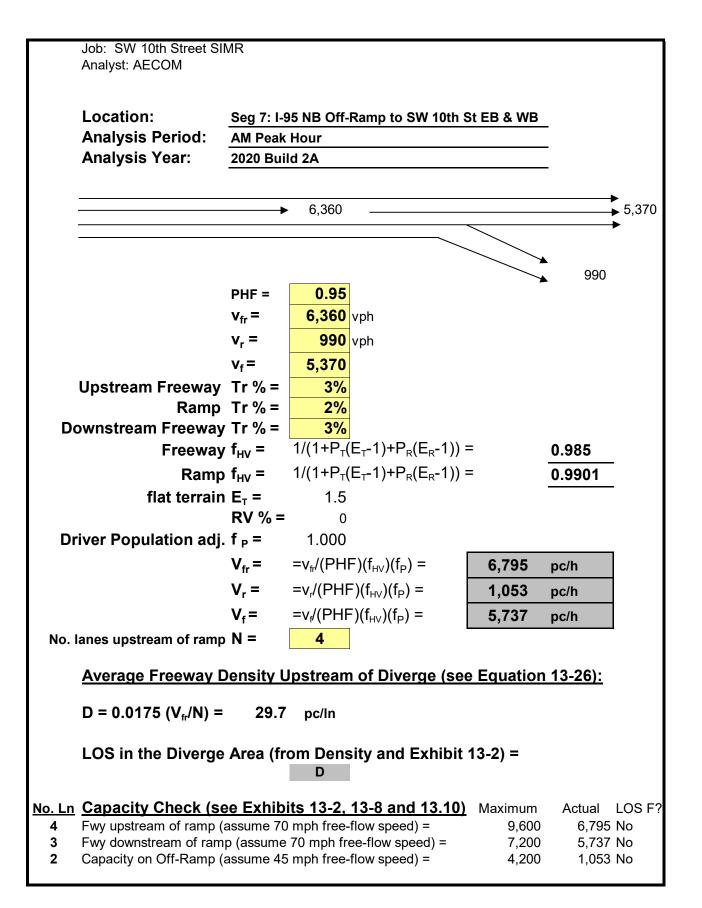
		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSHE	ET				
Genera	l Infori	mation			Site Infor	mation					
Analyst				Fr	eeway/Dir of Tr	avel I-	-95 NB				
gency or (		AECO	MC	Ju	nction	S	Seg 4-On	from Exp			
ate Perfor					risdiction	_					
nalysis Tir				Ar	nalysis Year	2	020 Buil	d 2A			
roject Des nputs	scription	SW 10th Stree	t SIMR								
-			Freeway Num	ber of Lanes, N	4				1		
Jpstream A	Adj Ramp				4					Downstre	eam Adj
Yes	🗌 On		Ramp Numbe		1					Ramp	
				ane Length, L <sub>A</sub>	1500					🗹 Yes	🗌 On
✓ No	🗌 Off			ane Length L <sub>D</sub>						🗌 No	✓ Off
	_		Freeway Volu		5900						
up =	ft		Ramp Volume	e, V <sub>R</sub>	710					L <sub>down</sub> =	2950 ft
′ <sub>u</sub> =	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	250 veh/h
u —	ven/m		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	50.0					- D	200 1011/11
Conver	sion to	o pc/h Und	der Base	Conditions							
(pc/	′h)	V	PHF	Terrain	%Truck	%Rv	f <sub>H</sub>		f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	,	(Veh/hr)		Level		0	<u> </u>				
Freeway Ramp		5900	0.95	Level	3	0	0.98		1.00		6304
JpStream		710	0.92	Level	2	0 0.990 1.00			1.00		779
DownStrea	m	250	0.92	Level	2	0	0.99	0	1.00		274
			Merge Areas	20001	-	Ŭ	0.00		erge Areas		211
stimat	tion of	V <sub>12</sub>	•			Estimatio	on of		•		
		V <sub>12</sub> = V <sub>F</sub>	(P)								
=			ation 13-6 o	- 12 7)				·- ·	R + (V <sub>F</sub> - V <sub>R</sub> )		
EQ =						L <sub>EQ</sub> =		(E	quation 13-	12 or 13-	13)
, = / FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =		us	ing Equatio	n (Exhibit '	13-7)
/ <sub>12</sub> =		759 p		40 44 40		V <sub>12</sub> =		рс	/h		
$V_3$ or $V_{av34}$		2//2 p 17)	oc/n (Equau	on 13-14 or 13-		$V_3^{}$ or $V_{av34}^{}$		pc	h (Equation 1	3-14 or 13-	17)
s V <sub>3</sub> or V <sub>3</sub>	2,700	) pc/h? 🗹 Yes	s 🗌 No			Is $V_3$ or $V_{av34}$	, > 2,700	pc/h?	Yes 🗌 No		
<b>u</b>		V <sub>12</sub> /2 <b>√</b> Yes				Is $V_3^{}$ or $V_{av34}^{}$	<mark>، </mark> > 1.5 * ۱	/ <sub>12</sub> /2	Yes 🗌 No		
f Yes,V <sub>12a</sub> :				on 13-16, 13-		If Yes,V <sub>12a</sub> =		рс 13-1	/h (Equatior	י 13-16, <sup>י</sup>	13-18, or
.24		18, or	13-19)						19)		
Capacit	ty Che		1 .			Capacity	Chec				
		Actual		Capacity	LOS F?			Actual	-	acity	LOS F?
						V <sub>F</sub>			Exhibit 13-8	_	_
V <sub>F</sub>	0	7083	Exhibit 13-8		No	$V_{FO} = V_{F}$ -	· V <sub>R</sub>		Exhibit 13-8		
						V <sub>R</sub>			Exhibit 13- 10		
	nterino	Merge In	fluence A	rea		Flow Ent	erina	Divera			<u> </u>
		Actual	Ú.	Desirable	Violation?		Act		Max Desi		Violation?
V <sub>R1</sub>	12	3602	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern					Servio		rminatio	n (if no	t F)
		0.00734 v <sub>R</sub> + 0		,					086 V <sub>12</sub> - 0.		/
	5.4 (pc/mi		12 0.	A			c/mi/ln)		12 0.	<b>-</b> D	
								2 2)			
	C (Exhibit 1	,					xhibit 1:				
		nination				Speed D					
•	.314 (Exib	oit 13-11)					hibit 13-				
6 <sub>R</sub> = 6	1.2 mph (	Exhibit 13-11)					h (Exhibi				
6 <sub>0</sub> = 6	5.9 mph (	Exhibit 13-11)				S <sub>0</sub> = mpl	h (Exhibi	t 13-12)			
6 = 6	3.4 mph (	Exhibit 13-13)				S = mpl	h (Exhibi	t 13-13)			
nt @ 2016 U	Iniversity of	f Florida, All Righ	nts Reserved			HCS2010 <sup>™</sup>	Version	6.00		Genera	ated: 6/17/2020

		RAMP	S AND RAM			RKS	HEET			
General Info	rmation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 NB				
gency or Compan	ny AECO	OM		nction		Seg 5-0	Off to Exp f	rom GPL		
Date Performed				risdiction		2020 0				
nalysis Time Perio Project Description			An	alysis Year		2020 B	JIIO ZA			
nputs	300 1001 3000									
		Freeway Num	ber of Lanes, N	4					_	
Upstream Adj	Ramp	Ramp Numbe		4					Downstrea Bomp	m Adj
✓ Yes	✓ On	•		I					Ramp	
			ane Length, L <sub>A</sub>						Yes	🗌 On
No	Off		_ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	6610						
L <sub>up</sub> = 2	2950 ft	Ramp Volume	e, V <sub>R</sub>	250					L <sub>down</sub> =	ft
	- / / /	Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
$V_u = 7$	710 veh/h	Ramp Free-Fl	ow Speed, S <sub>EP</sub>	45.0					VD	VEII/II
Conversion	to pc/h Und		- 11							
	V	PHF		0/ Truck	0/ Dv		f	f	v = V/PHF	vf vf
(pc/h)	(Veh/hr)	РПГ	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>		<sup>∧</sup> ' <sub>HV</sub> <sup>∧</sup> ' <sub>p</sub>
reeway	6610	0.95	Level	3	0	0.9	985	1.00	706	62
Ramp	250	0.92	Level	2	0	0.9	990	1.00	27	4
JpStream	710	0.92	Level	2	0	0.9	990	1.00	77	9
ownStream										
- 4:		Merge Areas			<b>F</b> = 4 <sup>2</sup> + + = 4			iverge Areas		
stimation o	)r v <sub>12</sub>				Estimat	ion o	r v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13)	)
FM =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		0.	436 using Equ	uation (Exhib	oit 13-7)
12 <sup>=</sup>	pc/h				V <sub>12</sub> =			34 pc/h		
<sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$			14 pc/h (Equa	ation 13-14	or 13-17
s V <sub>3</sub> or V <sub>av34</sub> > 2,7			,			~ > 2.7		Yes <b></b> No		
s $V_3$ or $V_{av34} > 1.5$								Yes Vo		
• ••••			-16, 13-18, or			• •		c/h (Equation	13-16, 13-	18. or 13
Yes,V <sub>12a</sub> =	13-19)		,		If Yes,V <sub>12a</sub> =	=	- 19	· ·	,	,
Capacity Ch	ecks				Capacit	v Che	ecks			
					Capacity					
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F
	Actual	C	apacity	LOS F?	V <sub>F</sub>		Actual 7062	Ca Exhibit 13-8		LOS F No
V <sub>EO</sub>	Actual	C Exhibit 13-8	apacity	LOS F?	V <sub>F</sub>				9600	
V <sub>FO</sub>	<u>Actual</u>		apacity	LOS F?	V <sub>F</sub> V <sub>FO</sub> = V <sub>F</sub>		7062 6788	Exhibit 13-8 Exhibit 13-8	9600 9600	No No
		Exhibit 13-8		LOS F?	$\frac{V_{F}}{V_{FO} = V_{F}}$	- V <sub>R</sub>	7062 6788 274	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10	9600 9600 9600 2100	No
	ng Merge In	Exhibit 13-8	Irea		$\frac{V_{F}}{V_{FO} = V_{F}}$	- V <sub>R</sub>	7062 6788 274 <b>g Dive</b>	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 rge Influen	9600           9600           9600           2100           Ce Area	No No No
low Enterir		Exhibit 13-8 <b>offluence A</b> Max		LOS F? Violation?	$V_{FO} = V_{F}$ $V_{R}$ <i>Flow En</i>	- V <sub>R</sub>	7062 6788 274 <b>g Dive</b>	Exhibit 13-8 Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab	9600           9600           9600           2100	No No Violation
Flow Enterin	n <b>g Merge In</b> Actual	Exhibit 13-8 <b>afluence A</b> Max Exhibit 13-8	<b>rea</b> Desirable		$V_{FO} = V_{F}$ $V_{FO} = V_{F}$ $V_{R}$ Flow En	terin 3	7062 6788 274 <b>g Dive</b> Actual 234	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8	9600           9600           9600           2100 <b>Ce Area</b> Ile           4400:All	No No No Violation No
Flow Enterin V <sub>R12</sub> .evel of Ser	ng Merge In Actual	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_{F}$ $V_{FO} = V_{F}$ $V_{R}$ <i>Flow En</i> $V_{12}$ <i>Level of</i>	terin F Serv	7062 6788 274 <b>g Dive</b> Actual 234 rice De	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8 <b>termination</b>	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No
Flow Enterin V <sub>R12</sub> .evel of Ser D <sub>R</sub> = 5.475 + 0	ng Merge In Actual Vice Detern 0.00734 v <sub>R</sub> + 0	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_{F}$ $V_{FO} = V_{F}$ $V_{R}$ Flow En	$\frac{1}{P_{R}} = \frac{1}{P_{R}}$	7062 6788 274 <b>g Dive</b> Actual 234 <b>rice De</b> .252 + 0	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No
V <sub>R12</sub> evel of Ser           D <sub>R</sub> = 5.475 + (           R = (pc/mi/l	ng Merge In Actual Vice Detern 0.00734 v <sub>R</sub> + 0 In)	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En	<b>terin</b> <b>f Serv</b> D <sub>R</sub> = 4	7062 6788 274 <b>g Dive</b> xctual 234 r <b>ice De</b> .252 + 0 mi/ln)	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8 <b>termination</b>	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No Violation No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 + 0$ $R_R = (pc/mi/l)$ OS = (Exhibit)	ng Merge In Actual Actu	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En	<b>terin</b> <b>f Serv</b> D <sub>R</sub> = 4	7062 6788 274 <b>g Dive</b> Actual 234 <b>rice De</b> .252 + 0	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8 <b>termination</b>	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No Violation No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 + 0$ $R_R = (pc/mi/l)$ OS = (Exhibit)	ng Merge In Actual Actu	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En	$\frac{1}{P} = \frac{V_R}{P}$	7062 6788 274 <b>g Dive</b> Actual 234 <b>rice De</b> .252 + 0 mi/ln) bit 13-2)	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 Tige Influent Max Desirab Exhibit 13-8 Exhibit 13-8 Exhibit 13-8	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No Violation No
VR12           evel of Ser           DR = 5.475 + 0           R = (pc/mi/I)           OS = (Exhibit)           Speed Deter	ng Merge In Actual vice Detern 0.00734 v <sub>R</sub> + 0 In) t 13-2) rmination	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = 30$ LOS = D Speed L	Image: V_R           Im	7062 6788 274 <b>g Dive</b> Actual 234 <b>rice De</b> .252 + 0 mi/ln) bit 13-2)	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 <b>rge Influen</b> Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 + 0$ $R_R = (pc/mi/l)$ OS = (Exhibit) Speed Deter $I_S = (Exibit)$	ng Merge In Actual Vice Detern 0.00734 v <sub>R</sub> + 0 In) t 13-2) rmination 13-11)	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = 30$ $LOS = D$ $Speed L$ $D_s = 0.3$	$\frac{1}{P} = V_R$ $\frac{1}{P}$	7062 6788 274 <b>g Dive</b> 234 <b>rice De</b> .252 + 0 mi/ln) bit 13-2) <b>minatic</b>	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 Tige Influent Max Desirab Exhibit 13-8 Exhibit 13-8 Exhi	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No
Flow Enterin $V_{R12}$ Evel of Ser $D_R = 5.475 + (0)$ $R^R = (pc/mi/l)$ OS = (Exhibit) CS = (Exhibit) $R^R = (Pc/mi/l)$ R = (Pc/mi/l) CS =	ng Merge In Actual Actual vice Detern 0.00734 v <sub>R</sub> + 0 In) t 13-2) rmination 13-11) khibit 13-11)	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = 30$ $LOS = D$ $Speed D$ $D_s = 0.3$ $S_R = 61$	Image: V_R           Im	7062 6788 274 <b>g Dive</b> 234 <b>rice De</b> .252 + 0 mi/ln) bit 13-2) <b>minatic</b> khibit 13-	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 Tge Influent Max Desirab Exhibit 13-8 Exhibit 13-8 termination .0086 V <sub>12</sub> - 0.0	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No
Flow Enterin $V_{R12}$ Evel of Ser $D_R = 5.475 + 0$ $D_R = (pc/mi/l)$ OS = (Exhibit) Speed Deter $M_S = (Exibit)$ $R^= mph (Exibit)$ $0^= mph (Exibit)$	ng Merge In Actual Vice Detern 0.00734 v <sub>R</sub> + 0 In) t 13-2) rmination 13-11)	Exhibit 13-8 <b>offluence A</b> Max Exhibit 13-8 <b>mination (</b> i	Trea Desirable if not F)		$V_{FO} = V_{F}$ $V_{FO} = V_{F}$ $V_{R}$ <i>Flow En</i> $V_{12}$ <i>Level of</i> $D_{R} = 30$ $LOS = D$ $Speed L$ $D_{s} = 0.3$ $S_{R} = 61$ $S_{0} = 73$	$\frac{1}{P} = V_R$ $\frac{1}{P}$	7062 6788 274 <b>g Dive</b> Actual 234 <b>rice De</b> .252 + 0 mi/In) bit 13-2) <b>minatic</b> chibit 13-	Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 Tige Influent Max Desirab Exhibit 13-8 Exhibit 13-10 Exhibit 13-8 Exhibit 13-8 Exhibit 13-10 Exhibit 13-8 Exhibit 13-10 Exhibit 13-8 Exhibit 13-10 Exhibit 13-8 Exhibit 13-10 Exhibit 13-8 Exhibit 13-8	9600 9600 2100 <b>Ce Area</b> Ile 4400:All <b>n (if not F</b>	No No No Violation No

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 6-S 2020 Bu	outh of Off to 10th ild 2A
Project Description SW 10th Oper.(LOS)	Street SIMR		Des.(N)		anning Data
Flow Inputs			Jes.(N)		anning Data
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	6360	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f <sub>∟w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	( f <sub>HV</sub> x f <sub>p</sub> ) 1699 67.1 25.3 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ $S$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hol	S - Speed D - Density FFS - Free-flow BFFS - Base fro ur volume		E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 8-B 2020 Bu	et Off & Off Ramps ild 2A
Project Description SW 10th	Street SIMR				
Oper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs Volume, V	5370	veh/h	Peak-Hour Factor, PHF	0.95	
AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/day veh/h	%Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	3 0 Level mi	
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS		
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS		pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x S)$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre		E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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General Inf	ormation		S AND RAM			-1110				
	ormation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 NE				
gency or Compa ate Performed	any AEC	OM		nction	Seg 9-Off to Hillsboro EB&WB					
nalysis Time Pe	eriod AM			risdiction alysis Year		2020 B				
<u> </u>	on SW 10th Stree		AI	Idiysis Tedi		2020 B				
nputs										
		Eroowov Num	ber of Lanes, N	3						
Upstream Ac	Jj Ramp	-		3					Downstrea	ım Adj
		Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On	Acceleration L	ane Length, L <sub>A</sub>						✓ Yes	🗹 On
✓ No	Off	Deceleration l	_ane Length L <sub>D</sub>	200						
		Freeway Volu	me, V <sub>⊏</sub>	5370					🗌 No	Off
L <sub>up</sub> =	ft	Ramp Volume	1	1250					L <sub>down</sub> =	2100 ft
up										
V <sub></sub> =	veh/h	-	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	1290 veh
4		-	ow Speed, S <sub>FR</sub>	45.0						
Conversior	n to pc/h Un	<u>der Base (</u>	Conditions			_				
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>H∨</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>n</sub>
reeway	(Veh/hr) 5370	0.95		3	0	_	985	1.00	57	1
Ramp			Level			_				
-	1250	0.92	Level	2	0	0.	990	1.00	13	12
JpStream DownStream	1200	0.92	Loval	2	0		200	1.00	14	16
JownStream	1290	Merge Areas	Level	Ζ	0	0.	990	Diverge Areas	14	10
stimation		Merge Areas			Estimat	iono		nverge Areas		
Sumation					LStimat					
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	: V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	<sub>R</sub> )P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13	)
FM =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		0.	553 using Equ	uation (Exhil	oit 13-7)
	pc/h				V <sub>12</sub> =			788 pc/h		,
<sup>12</sup> 3 or V <sub>av34</sub>	•	(Equation 13	-14 or 13-17)		$V_3^{12}$ or $V_{av34}^{12}$			949 pc/h (Equ	ation 13-14	or 13-17
	2,700 pc/h? 🗌 Ye					> 2 7		⊇Yes ☑No		
0 4001					0 u.	• ·				
$s v_3 0 v_{av34} > 1$	1.5 * V <sub>12</sub> /2 Ye		16 12 10 or		IS V <sub>3</sub> OI V <sub>av</sub>	34 ~ 1.5		Yes 🗹 No c/h (Equation	12 16 12	10 or 12
Yes,V <sub>12a</sub> =	13-19		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		9)	13-10, 13-	10, 01 13
Capacity C		/			Capacit	v Ch		~ /		
	Actual	С	apacity	LOS F?	1	<u>, , , , , , , , , , , , , , , , , , , </u>	Actual	Са	pacity	LOS F
		1 i			V <sub>F</sub>		5737	Exhibit 13-8	<u> </u>	No
V					· · · ·				_	
V <sub>FO</sub>		Exhibit 13-8			$V_{FO} = V_{F}$	- • <sub>R</sub>	4365	Exhibit 13-8	-	No
					V <sub>R</sub>		1372	Exhibit 13-1	0 2100	No
low Enter	ing Merge In	ofluence A	rea		Flow En	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		/	Actual	Max Desirat	ole	Violation
		Exhibit 13-8			V <sub>12</sub>	3	788	Exhibit 13-8	4400:All	No
V <sub>R12</sub>		nination (	if not F)	•	Level of	f Serv	vice De	terminatio	n (if not l	F)
V <sub>R12</sub> .evel of Se	rvice Detern							.0086 V <sub>12</sub> - 0.	•	/
.evel of Se		0.0078 V <sub>10</sub> -	0.000Z1 LA			к 5.0 (рс,		12	D	
. <b>evel of Se</b> D <sub>R</sub> = 5.475 +	- 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>		D = 30					
.evel of Se D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi	- 0.00734 v <sub>R</sub> + i/ln)	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>							
evel of Se D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/m OS = (Exhit	• 0.00734 v <sub>R</sub> + i/ln) pit 13-2)	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>		LOS = E	(Exhit	oit 13-2)			
D <sub>R</sub> = 5.475 + D <sub>R</sub> = (pc/m OS = (Exhit	- 0.00734 v <sub>R</sub> + i/ln)	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>		LOS = E Speed L	(Exhit Deter	bit 13-2) <b>minatic</b>			
evel of Se D <sub>R</sub> = 5.475 + R = (pc/mi OS = (Exhit Speed Dete	• 0.00734 v <sub>R</sub> + i/ln) pit 13-2)	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>		LOS = E Speed L	(Exhit Deter	oit 13-2)			
$P_R = 5.475 + P_R = (pc/m)$ $P_R = (pc/m)$ $P_R = (Exhib)$ $P_R = (Exhib)$ $P_R = (Exib)$	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)	0.0078 V <sub>12</sub> -	- 0.00027 L <sub>A</sub>		LOS = E <b>Speed L</b> D <sub>s</sub> = 0.	(Exhit <b>Deter</b> 421 (E	bit 13-2) <b>minatic</b>	-12)		
$\begin{array}{l} \textbf{evel of Se} \\ \textbf{D}_{R} = 5.475 + \\ \textbf{R} = (pc/m) \\ \textbf{OS} = (Exhit) \\ \textbf{OS} = (Exhit) \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} \\ \textbf{OS} = \textbf{OS} \\ \textbf{OS} $	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11) Exhibit 13-11)	0.0078 V <sub>12</sub> -	- 0.00027 L <sub>A</sub>		LOS = E <b>Speed L</b> $D_s = 0.$ $S_R = 58$	(Exhik <b>Deter</b> 421 (E 8.2 mph	bit 13-2) <b>minatic</b> xhibit 13 (Exhibit	-12) 13-12)		
evel of Se $D_R = 5.475 +$ $R =$ $(pc/m)$ $OS =$ $(Exhik)$ $CS =$ $(Exhik)$ $S =$ $(Exhik)$ $R =$ $mph$ (E $0 =$ $mph$ (E	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)	0.0078 V <sub>12</sub> -	0.00027 L <sub>A</sub>		LOS = E <b>Speed L</b> $D_{s} = 0.$ $S_{R} = 58$ $S_{0} = 73$	(Exhit Deter 421 (E 8.2 mph 3.1 mph	oit 13-2) <b>minatic</b> xhibit 13	-12) 13-12) 13-12)		

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 10-1 2020 Bu	Bet Off & On Ramps ild 2A
Project Description SW 10th	Street SIMR				
Oper.(LOS)			Des.(N)	L Pla	nning Data
<i>Flow Inputs</i> Volume, V AADT	4120	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured)	3 70.0	ft ft ramps/mi mph	f <sub>∟w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
Base free-flow Speed, BFFS		mph			
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1467 69.2 21.2 C	pc/h/ln mph pc/mi/ln	Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hol	S - Speed D - Density FFS - Free-flow BFFS - Base fro	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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		F	REEWAY	WEAV	NG WOF	RKSHEE	Т		
General	Informati	ion			Site Info	rmation			
Analyst Agency/Com Date Perforr Analysis Tim	ned ne Period	AECO AM			Freeway/Dir of TravelI-95 NBWeaving Segment LocationSeg 11-Bet On & Off to ExpAnalysis Year2020 Build 2A				
Project Desc Inputs	cription SW 10	th Street SIMF	{						
Weaving configuration       Two-Sided         Weaving number of lanes, N       4         Weaving segment length, L <sub>s</sub> 2970ft         Freeway free-flow speed, FFS       70 mph         Conversions to pc/h Under Base Condition					Segment typ Freeway min Freeway may Terrain type	Freewa 1! 2400 Leve			
Convers	sions to p	<u>c/h Unde</u>	r Base Co	ondition	1		1	r	
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	3644	0.95	3	0	1.5	1.2	0.985	1.00	3893
V <sub>RF</sub>	2246	0.92	2	0	1.5	1.2	0.990	1.00	2466
V <sub>FR</sub>	476	0.92	2	0	1.5	1.2	0.990	1.00	523
V <sub>RR</sub>	294	0.92	2	0	1.5	1.2	0.990	1.00	323
V <sub>NW</sub>	6882							V =	7205
V <sub>W</sub>	323							-	
VR	0.045								
	ration Ch		tics						
Minimum m	aneuver lanes,	N <sub>WL</sub>		0 lc			hanges, LC <sub>MIN</sub>		969 lc/h
Interchange	5			0.7 int/mi	Weaving lan				1462 lc/h
	F lane changes	i vi		0 lc/pc	Non-weaving	2452 lc/h			
Minimum FF	R lane changes	s, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		3914 lc/h
Minimum RI	R lane changes	s, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		1431
Weaving	g Segmen	t Speed,	Density, I	_evel of	Service,	and Cap	oacity		
Weaving se	gment flow rate	e, v		7115 veh/h	Weaving inte	5			0.281
Weaving se	gment capacity	/, C <sub>W</sub>		8500 veh/h	Weaving sec	, ,			54.5 mph
0	gment v/c ratio			0.837	Average wea	<b>U</b> .	**		57.9 mph
0	gment density,	D	33	3.0 pc/mi/ln	Average nor				54.4 mph
Level of Ser	vice, LUS			D	Maximum we	eaving length	n, L <sub>MAX</sub>		6144 ft
	egments longer			ength should I	pe treated as is	olated merge	and diverge are	eas using the	procedures of
	Freeway Merge es that exceed th			ne level of sei	vice is "F".				

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	BASIC FR	EEWAY SE	GMENTS WORKSHEE	T	
General Information			Site Information		
Analyst			Highway/Direction of Trave	el <i>I-95 NB</i>	}
Agency or Company	AECOM		From/To	Seg 12-	North of Hillsboro
Date Performed Analysis Time Period	AM		Jurisdiction Analysis Year	2020 Bi	uild 2A
•	Oth Street SIN	<i>IR</i>	/		
✓ Oper.(LOS)			Des.(N)	🗌 Plai	nning Data
Flow Inputs					
Volume, V	5890	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, $P_T$	3	
Peak-Hr Prop. of AADT, K		-	%RVs, P <sub>R</sub>	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length	mi	
			Up/Down %		
Calculate Flow Adjus	stments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	1)] <i>0.985</i>	
Speed Inputs			Calc Speed Adj and	FFS	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	4		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph		70.0	-
Base free-flow Speed,	1010	-	FFS	70.0	mph
BFFS		mph			
LOS and Performanc	e Measures	6	Design (N)		
Operational (LOS)			Design (N)		
Operational (LOS)	NIVE		Design LOS		
$v_p = (V \text{ or } DDHV) / (PHF x)$	<sup>IN X I</sup> HV 1573	pc/h/ln	$v_p = (V \text{ or DDHV}) / (PHF x)$	N x f <sub>HV</sub>	
x f <sub>p</sub> )			x f <sub>p</sub> )		pc/h/ln
S	68.4	mph	S		mph
D = v <sub>p</sub> / S	23.0	pc/mi/ln	$D = v_p / S$		pc/mi/ln
LOS	С		Required Number of Lane	s. N	p 0, 111, 111
Glossary			Factor Location	,	
N - Number of lanes	S - Spee	ed			<b>, _ . . . . . . . . . .</b>
V - Hourly volume	D - Dens		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8
•		•	E <sub>T</sub> - Exhibits 11-10, 11-11,	, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate LOS - Level of service		e-flow speed ase free-flow	f <sub>p</sub> - Page 11-18		TRD - Page 11-1
speed	DFF3 - Ba		LOS, S, FFS, v <sub>p</sub> - Exhibits	11-2,	
DDHV - Directional design	hour volume		11-3		

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			REEWA	WEAV	NG WOF	-				
Genera	l Informati	on			Site Information					
Analyst Agency/Cor Date Perfor Analysis Tin	ne Period	AECO PM			Weaving Seg	Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 1-Bet Copans & Sample Analysis Year 2020 Build 2A				
Project Des I <b>nputs</b>	cription SW 10	th Street SIM	2							
Veaving se Freeway fre	nfiguration mber of lanes, I gment length, L e-flow speed, F sions to p	r Base Co	4 2380ft 70 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freewa 24( Lev		
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)	
V <sub>FF</sub>	3985	0.95	3	0	1.5	1.2	0.985	1.00	4258	
V <sub>RF</sub>	415	0.92	2	0	1.5	1.2	0.990	1.00	456	
V <sub>FR</sub>	1560	0.92	2	0	1.5	1.2	0.990	1.00	1713	
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0	
V <sub>NW</sub>	4258							V =	6427	
V <sub>W</sub>	2169									
VR	0.337									
Configu	iration Ch	aracteris	tics							
Minimum m	aneuver lanes,	N <sub>WL</sub>		2 lc	Minimum we	aving lane c	hanges, LC <sub>MIN</sub>		2169 lc	
Interchange	e density, ID			0.7 int/mi	Weaving lan	e changes, L	-C <sub>w</sub>		2604 lc	
Minimum R	F lane changes	, LC <sub>rf</sub>		1 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		1397 lc	
Minimum F	R lane changes	, LC <sub>FR</sub>		1 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		4001 lc	
Minimum R	R lane changes	, LC <sub>RR</sub>		lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		70	
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Cap	pacity			
•	egment flow rate	6342 veh/h 7006 veh/h	Weaving inte Weaving seg	ensity factor, gment speed			0.34 49.5 mp			
	gment v/c ratio	vv		0.905	Average wea	aving speed,	S <sub>w</sub>		56.0 mp	
•	egment density,	D	32	2.5 pc/mi/ln					46.7 mp	
Level of Se	rvice, LOS			D	Maximum weaving length, L <sub>MAX</sub>				5989	

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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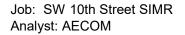
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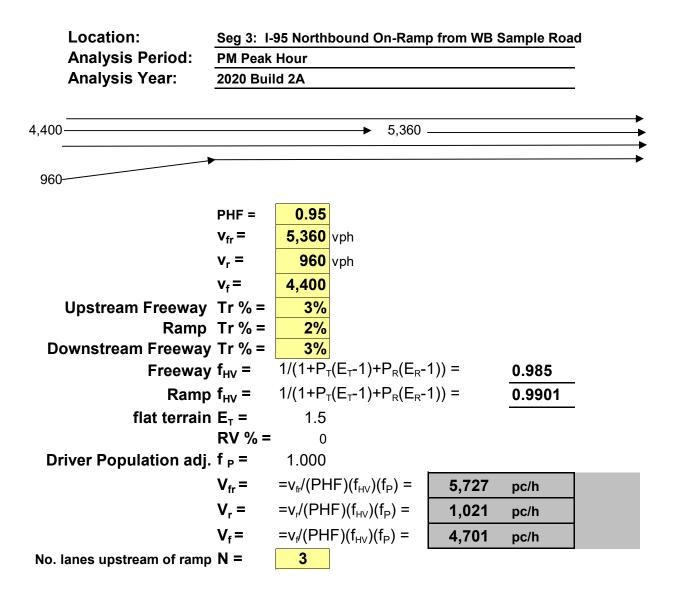
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company	AECOM		Highway/Direction of Travel From/To	I-95 NB Seg 2-Bet Sample	Off & On from
Date Performed Analysis Time Period	PM		Jurisdiction Analysis Year	2020 Build	d 2A
Project Description SW 10th	n Street SIMR				
✓ Oper.(LOS)			Des.(N)	Plan	ning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4400	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjustn	oonto				
•				1.0	
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	3	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			·
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	k f <sub>HV</sub> x f <sub>p</sub> ) 1567 68.4 22.9 C	pc/h/ln mph pc/mi/ln	Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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<u>No. Ln</u>	Capacity Check (see Exhibits 25-3 and 25-7):	Maximum	Actual	V/c	LOS F?
4	Fwy downstream of ramp (assume 70 mph free-flow speed) =	9,600	5,727	0.60	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	4,701	0.65	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,021	0.49	No

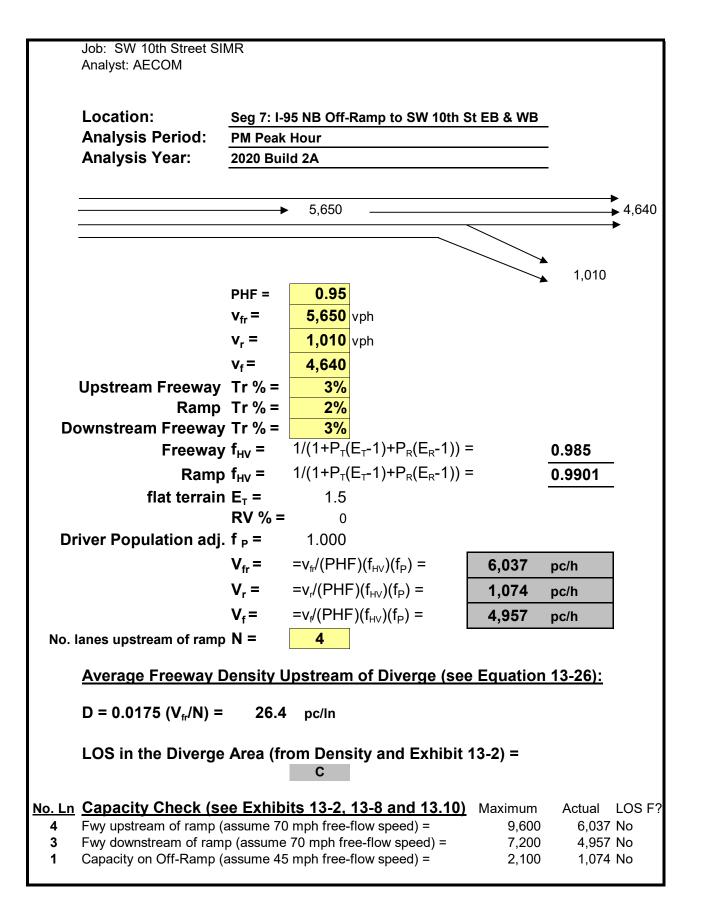
		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSHE	ET				
Genera	l Infor	nation			Site Infor	mation					
Analyst				Fr	eeway/Dir of Tr	avel I	-95 N	B			
Agency or (		AECO	MC	Ju	inction	S	Seg 4	-On from Ex	¢ρ		
Date Perfor					irisdiction						
Analysis Tir		PM		Ar	nalysis Year	2	2020	Build 2A			
<sup>p</sup> roject Des Inputs	scription	SW 10th Stree	t SIMR								
			Freeway Num	ber of Lanes, N	4						
Jpstream A	Adj Ramp		Ramp Numbe		4					Downstre Ramp	eam Adj
Yes	🗌 On				•						
				ane Length, L <sub>A</sub>	1500					🗹 Yes	🗌 On
✓ No	🗌 Off			Lane Length L <sub>D</sub>						🗌 No	✓ Off
_	a		Freeway Volu	1	5360					_	2950 ft
-up =	ft		Ramp Volume	IX .	620					L <sub>down</sub> =	2950 IL
√ <sub>u</sub> =	veh/h			-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	330 veh/h
u	Voliiili		Ramp Free-F	ow Speed, S <sub>FR</sub>	50.0					D	
Conver	rsion to	-	der Base	Conditions							
(pc/	/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	IF x f <sub>HV</sub> x f <sub>p</sub>
Freeway		5360	0.95	Level	3	0	0	).985	1.00		5727
Ramp		620	0.92	Level	2	0	-	).990	1.00		681
UpStream											
DownStrea	am	330	0.92	Level	2	0	0	).990	1.00		362
			Merge Areas						Diverge Areas	-	
Estimat	tion of	v <sub>12</sub>				Estimati	on o	of v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V -			
- <sub>EQ</sub> =			ation 13-6 o	r 13-7)					V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	• • • •	40)
P <sub>FM</sub> =				tion (Exhibit 13-6)	1	L <sub>EQ</sub> = D =			(Equation 13		
/ <sub>12</sub> =		760 p		(		P <sub>FD</sub> =			using Equatio	on (Exhibit	13-7)
		-		on 13-14 or 13-		V <sub>12</sub> =			pc/h		( - )
$V_3$ or $V_{av34}$		17)				V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation		-17)
Is $V_3$ or $V_{a'}$	<sub>v34</sub> > 2,700	) pc/h? 🗌 Yes	s 🗹 No						Yes No		
Is $V_3$ or $V_{a}$	<sub>v34</sub> > 1.5 *	V <sub>12</sub> /2 Ves	s 🗌 No			Is V <sub>3</sub> or V <sub>av34</sub>	<sub>4</sub> > 1.	5 * V <sub>12</sub> /2	Yes No	10.10	10.10
f Yes,V <sub>12a</sub>		2290 p	oc/h (Equati	on 13-16, 13-		If Yes,V <sub>12a</sub> =			pc/h (Equatio 3-19)	on 13-16, 1	13-18, or
		18, or	13-19)			Conositi			5 10)		
Capaci	ty Che			Non o city		Capacity		r			
		Actual		Capacity	LOS F?	V <sub>F</sub>		Actual	Exhibit 13	pacity	LOS F?
							V			_	
V <sub>F</sub>	0	6408	Exhibit 13-8		No	$V_{FO} = V_{F}$	- v <sub>R</sub>		Exhibit 13		
						V <sub>R</sub>			Exhibit 13 10	3-	
-low Ei	nterina	Merge In	fluence A	rea		Flow En	terii	na Dive	rge Influei	nce Area	 a
		Actual	1 C	Desirable	Violation?		1	Actual	Max Des		Violation?
V <sub>R</sub>	12	3245	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	hination (	if not F)	!	Level of	Ser	vice De	terminatio	on (if no	t F)
		0.00734 v <sub>R</sub> + 0		/					.0086 V <sub>12</sub> - 0		
	22.5 (pc/mi		12	~			c/mi/		12	U	
	C (Exhibit 1							it 13-2)			
		nination				Speed D					
									///		
0	).271 (Exib	,				, i		13-12) hihit 12 12)			
		Exhibit 13-11)					•	(hibit 13-12)			
0	• •	Exhibit 13-11)				, v		hibit 13-12)			
		Exhibit 13-13)				S = mp	h (Ex	hibit 13-13)			
nt © 2016 U	Jniversitv of	f Florida, All Rigł	nts Reserved			HCS2010 <sup>™</sup>	M Ve	rsion 6 90		Genera	ated: 6/17/2020

		RAMP	S AND RAM			RKS	HEET			
General Info	ormation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 NE				
gency or Compar	iy AEC	OM		nction		Seg 5-0	Off to Exp	from GPL		
Date Performed	ad DM			risdiction		2020 0				
nalysis Time Peri Project Description			An	alysis Year		2020 B	ulia za			
nputs										
	_	Freeway Num	ber of Lanes, N	4					_	
Upstream Adj	Ramp	Ramp Numbe		4					Downstrea Bomp	ım Adj
✓ Yes	✓ On			1					Ramp	
			ane Length, L <sub>A</sub>						🗌 Yes	🗌 On
No	Off		ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	5980						
$L_{up} = 2$	2950 ft	Ramp Volume	, V <sub>R</sub>	330					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V -	veh/h
$V_u = 6$	620 veh/h	-	ow Speed, S <sub>FR</sub>	45.0					V <sub>D</sub> =	ven/n
Conversion	to pc/h Un									
				0/ <del>-</del> 1	a/ 5		<i>c</i>	6		
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x t <sub>HV</sub> x t <sub>p</sub>
reeway	5980	0.95	Level	3	0	0.	985	1.00	63	89
Ramp	330	0.92	Level	2	0	0.	990	1.00	36	62
JpStream	620	0.92	Level	2	0	0.	990	1.00	68	31
ownStream										
		Merge Areas						Diverge Areas		
stimation o	of v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )					V <sub>12</sub> =	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
<sub>EQ</sub> =	12 1	ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
<sub>=Q</sub> <sub>FM</sub> =		Equation (E						436 using Equ		
	-				P <sub>FD</sub> =					51(15-7)
12 =	pc/h				V <sub>12</sub> =			990 pc/h		
<sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		$V_3 \text{ or } V_{av34}$			699 pc/h (Equ	ation 13-14	or 13-17
s V <sub>3</sub> or V <sub>av34</sub> > 2,7								Yes 🗹 No		
s V <sub>3</sub> or V <sub>av34</sub> > 1.8					Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 1.5		🗌 Yes 🗹 No		
Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equation 9)	13-16, 13-	18, or 13
Capacity Ch		)			Capacit			9)		
apacity ch	Actual	C	apacity	LOS F?		y ch	Actual	Ca	pacity	LOS F
	Actual	ŤŤ	apaony		V <sub>F</sub>		6389	Exhibit 13-8	1	No
									_	
V <sub>FO</sub>		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	6027	Exhibit 13-8	_	No
					V <sub>R</sub>		362	Exhibit 13-1	0 2100	No
low Enterin	ng Merge In	fluence A	rea		Flow En	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		/	Actual	Max Desirab	le	Violation
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	2	2990	Exhibit 13-8	4400:All	No
evel of Ser.	vice Detern	nination (i	if not F)		Level of	f Serv	vice De	terminatio	n (if not l	F)
D <sub>R</sub> = 5.475 + (	0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>Δ</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	-
<sub>R</sub> = (pc/mi/		12	<i>/</i> /			8.2 (pc/		12	D	
OS = (Exhibi	,						oit 13-2)			
,	,					•	,			
peed Deter	rmination				Speed L					
l <sub>s</sub> = (Exibit	13-11)				s.	•	xhibit 13			
5 (	(hihit 12 11)				S <sub>R</sub> = 60	0.7 mph	(Exhibit	13-12)		
R <sup>=</sup> mph (E)	(11011-13-11)									
R <sup>=</sup> mph (E>	(hibit 13-11)					4.1 mph	(Exhibit	13-12)		
<sub>R</sub> = mph (E> ₀= mph (E>	,				S <sub>0</sub> = 74		(Exhibit (Exhibit			

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 6-S 2020 Bu	outh of Off to 10th iild 2A
Project Description SW 10th	Street SIMR				anning Data
Flow Inputs			Des.(N)		anning Data
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	5650	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub> Ε <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	5	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f <sub>⊥w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	r f <sub>HV</sub> x f <sub>p</sub> ) 1509 68.9 21.9 C	pc/h/ln mph pc/mi/ln	Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hou	S - Speed D - Density FFS - Free-flow BFFS - Base fro	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 8-B 2020 Вг	et Off & Off Ramps iild 2A
Project Description SW 10th	Street SIMR				
✓ Oper.(LOS)			Des.(N)	🗌 Pla	anning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4640	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
Calculate Flow Adjustm	nents		Up/Down %		
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		к f <sub>HV</sub> = 1/[1+Р <sub>т</sub> (Е <sub>т</sub> - 1) + Р <sub>R</sub> (Е <sub>R</sub> - 1)]	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance		ft ft	f <sub>LW</sub>		mph
Number of Lanes, N Total Ramp Density, TRD	3	ramps/mi	f <sub>LC</sub> TRD Adjustment		mph mph
FFS (measured) Base free-flow Speed, BFFS	70.0	mph	FFS	70.0	mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS		pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x S)$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hou	S - Speed D - Density FFS - Free-flow BFFS - Base fre	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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General Info	ormation		S AND RAM			1110				
	ormation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 NB				
gency or Compa ate Performed	any AEC	OM		nction		Seg 9-0	Off to Hills	boro EB&WB		
nalysis Time Per	riod PM			risdiction alysis Year		2020 B				
	n SW 10th Stree		AI	Idiysis Tedi		2020 D				
nputs										
		Freeway Num	ber of Lanes, N	3						
Upstream Ad	ij Ramp			3					Downstrea	m Adj
Yes	On	Ramp Numbe		1					Ramp	
			ane Length, L <sub>A</sub>						🗹 Yes	🗹 On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200					🗌 No	Off
		Freeway Volu	me, V <sub>F</sub>	4640						
L <sub>up</sub> =	ft	Ramp Volume	, V <sub>R</sub>	1230					L <sub>down</sub> =	2100 ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V -	1500
V <sub>u</sub> =	veh/h	-	ow Speed, S <sub>FR</sub>	45.0					V <sub>D</sub> =	1560 veh
Conversion	n to pc/h Un	-								
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
reeway	4640	0.95	Level	3	0	0.	985	1.00	49	57
Ramp	1230	0.92	Level	2	0	0.9	990	1.00	13	50
JpStream										
DownStream	1560	0.92	Level	2	0	0.9	990	1.00	17	13
		Merge Areas						Diverge Areas	-	
stimation	of v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )					V =	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
=	12 1	ation 13-6 or	13_7)		l =			Equation 13-1		1
EQ = _		Equation (E	,		L <sub>EQ</sub> = P -			.574 using Equ		
FM =	•				P <sub>FD</sub> =					JIL 13-7)
12 =	pc/h				V <sub>12</sub> =			420 pc/h		
$_3$ or V $_{av34}$			-14 or 13-17)		$V_3^{}$ or $V_{av34}^{}$			537 pc/h (Equ	ation 13-14	or 13-17
s V <sub>3</sub> or V <sub>av34</sub> > 2	2,700 pc/h? 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,7	00 pc/h? [	Yes 🗹 No		
s V <sub>3</sub> or V <sub>av34</sub> > 1	.5 * V <sub>12</sub> /2 Ye				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5		🗌 Yes 🗹 No		
Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equation	13-16, 13-	18, or 13
120	13-19	)						9)		
Capacity Cl	<u>.</u>		ana aitu		Capacit	y Che			no oitr	
	Actual	+ ř	apacity	LOS F?			Actual		pacity	LOS F
					V <sub>F</sub>		4957	Exhibit 13-8	_	No
V <sub>FO</sub>		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	3607	Exhibit 13-8	3 7200	No
					V <sub>R</sub>		1350	Exhibit 13-1	0 2100	No
low Enteri	ing Merge In	fluence A	rea		Flow En	nterin	g Dive	rge Influen	ce Area	
	Actual		Desirable	Violation?		1	Actual	Max Desirat		Violation
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3	420	Exhibit 13-8	4400:All	No
	rvice Deterr	nination (	if not F)		1	f Serv	vice De	terminatio	n (if not l	=)
evel of Se					1			.0086 V <sub>12</sub> - 0.	•	/
	5.55.5.5 R	12	A					12 01	D	
D <sub>R</sub> = 5.475 +	/ln)					1.9 (pc/	,			
D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi	,				$   \cup S = 0$	(Exhib	oit 13-2)			
D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi OS = (Exhib	oit 13-2)						-			
D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi	oit 13-2)				Speed L		minatio	on		
D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi OS = (Exhib Speed Dete	oit 13-2)				Speed L	Deter	mination Arribit 13			
$D_R = 5.475 +$ R = (pc/mi) OS = (Exhib) Compared Dete $H_S = (Exibit)$	bit 13-2) Ermination t 13-11)				<b>Speed                                   </b>	<b>Deter</b> 419 (E:		-12)		
$D_R = 5.475 +$ R = (pc/mi) OS = (Exhib) Speed Dete $H_S = (Exibit)$ $R^= mph (E)$	bit 13-2) <b>crmination</b> t 13-11) Exhibit 13-11)				<b>Speed L</b> D <sub>s</sub> = 0. S <sub>R</sub> = 58	<b>Deter</b> 419 (E: 3.3 mph	xhibit 13	-12) 13-12)		
$D_R = 5.475 +$ $_R = (pc/mi)$ OS = (Exhib) Cpeed Dete $_S = (Exibit)$ $_R = mph (E)$ $_0 = mph (E)$	bit 13-2) Ermination t 13-11)				<b>Speed L</b> D <sub>s</sub> = 0.4 S <sub>R</sub> = 58 S <sub>0</sub> = 74	<b>Detern</b> 419 (E: 3.3 mph 4.7 mph	xhibit 13 (Exhibit	-12) 13-12) 13-12)		

General Information					
Amelyet			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 NB Seg 10-E 2020 Bu	Bet Off & On Ramps ild 2A
Project Description SW 10	th Street SIMR				
✓ Oper.(LOS)	)		Des.(N)	🗌 Pla	nning Data
Flow Inputs					
/olume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	3410	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjust	ments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
_ane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Fotal Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS	i	mph			
LOS and Performance	Measures		Design (N)		
Operational (LOS)			<u>Design (N)</u> Design LOS		
v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S <sub>-</sub> OS	x f <sub>HV</sub> x f <sub>p</sub> ) 1214 70.0 17.3 B	pc/h/ln mph pc/mi/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes / - Hourly volume / <sub>p</sub> - Flow rate _OS - Level of service DDHV - Directional design he	S - Speed D - Density FFS - Free-flow BFFS - Base fre	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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			REEWAY	WEAV		_			
Genera	al Informati	on			Site Info	rmation			
Analyst Agency/Co Date Perfo Analysis Ti		AECO PM	И		Freeway/Dir Weaving Seg Analysis Yea	gment Locati		IB 1-Bet On & C Build 2A	Off to Exp
Project De Inputs	scription SW 10	th Street SIMF	2						
Weaving c Weaving n Weaving s Freeway fr	onfiguration umber of lanes, l egment length, L ee-flow speed, F	rs FS		Two-Sided 4 2970ft 70 mph	Segment typ Freeway min Freeway may Terrain type	imum speed			Freewa 1 240 Leve
Conve	rsions to p	<u>c/h Unde</u>	r Base Co	ondition			1	1	
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	2904	0.95	3	0	1.5	1.2	0.985	1.00	3103
V <sub>RF</sub>	2376	0.92	2	0	1.5	1.2	0.990	1.00	2608
V <sub>FR</sub>	506	0.92	2	0	1.5	1.2	0.990	1.00	556
V <sub>RR</sub>	414	0.92	2	0	1.5	1.2	0.990	1.00	455
V <sub>NW</sub>	6267		-	-	-			V =	6722
V <sub>W</sub>	455							-	
VR	0.068								
Config	uration Ch	aracteris	tics		•				
Minimum r	maneuver lanes,	N <sub>WL</sub>		0 lc	Minimum we	aving lane c	hanges, LC <sub>MIN</sub>		1365 lc/
Interchang	je density, ID			0.7 int/mi	Weaving lan	e changes, l	_C <sub>w</sub>		1858 lc/
Minimum I	RF lane changes	, LC <sub>RF</sub>		0 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		2135 lc/
Minimum I	R lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		3993 lc/
Minimum I	RR lane changes	s, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle ind	ex, I <sub>NW</sub>		130
Weavir	ng Segmen	t Speed,	Density, I	_evel of	Service,	and Ca	oacity		
Weaving s	egment flow rate	9, V		6640 veh/h	Weaving inte	ensity factor,	W		0.28
Weaving s	segment capacity	ν, C <sub>w</sub>		8437 veh/h					
Weaving s	egment v/c ratio			0.787	Average weaving speed S				57.8 mp
° °	segment density,	D	32	2.0 pc/mi/ln	Average non				52.1 mp
Level of S	ervice, LOS			D	Maximum we	eaving lengtl	n, L <sub>MAX</sub>		6361
Notes									
Chapter 13,	segments longer t "Freeway Merge nes that exceed th	and Diverge Se	egments".	-		olated merge	and diverge are	eas using the	procedures of

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	BASIC FR	EEWAY SE	GMENTS WORKSHEE	: I	
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Trave From/To Jurisdiction		North of Hillsboro
Analysis Time Period	PM	10	Analysis Year	2020 Bi	uild 2A
Project Description SW 1 @ Oper.(LOS)	Uth Street SIM		Des.(N)		ning Data
Flow Inputs			JES.(14)		
Volume, V AADT	5280	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjus	tments				
f <sub>ρ</sub> Ε <sub>τ</sub>	1.00 1.5		$E_{R}$ $f_{HV} = 1/[1+P_{T}(E_{T}-1)+P_{R}(E_{R}-1)]$	1.2 1)] <i>0.985</i>	
Speed Inputs			Calc Speed Adj and		
Lane Width		ft	· · · ·		
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	4		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured) Base free-flow Speed, BFFS	70.0	mph mph	FFS	70.0	mph
LOS and Performanc	e Measures	;	Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x l x f <sub>p</sub> ) S D = v <sub>p</sub> / S	N x f <sub>HV</sub> 1410 69.5 20.3	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x x f <sub>p</sub> ) S D = v <sub>p</sub> / S	N x f <sub>HV</sub>	pc/h/ln mph pc/mi/ln
LOS	С		Required Number of Lanes	s, N	po/mi/m
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service speed DDHV - Directional design	BFFS - Ba		E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-3	, 11-13	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-1

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 1-B 2020 Bu	et Hillsboro & Palmetto ild 2A
Project Description SW 10th	n Street SIMR				
Oper.(LOS)			Des.(N)	Pla	nning Data
<i>Flow Inputs</i> Volume, V AADT	4560	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance		ft ft	f <sub>LW</sub>		mph
Number of Lanes, N	4	п	f <sub>LC</sub>		mph
Total Ramp Density, TRD	7	ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph		70.0	mpn
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS		pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x S)$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fro	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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Ganar	al Informati		REEWAY	WEAV		-				
Genera	al informati	on			Site Info	rmation				
Analyst Agency/Co Date Perfo Analysis T		AECO AM	M		Freeway/Dir of TravelI95/SBWeaving Segment LocationSeg 2-Bet On from Exp & OffAnalysis Year2020 Build 2A					
	scription SW 10	th Street SIM	2							
Inputs										
Weaving n Weaving s	onfiguration umber of lanes, l egment length, L ree-flow speed, F	S		Two-Sided 4 3900ft 70 mph	Segment type Freeway min Freeway may Terrain type	imum speed			Freewa 240 Lev	
Conve	rsions to p	c/h Unde	r Base Co	ondition	5			-	-	
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)	
V <sub>FF</sub>	3470	0.95	3	0	1.5	1.2	0.985	1.00	3707	
V <sub>RF</sub>	970	0.92	2	0	1.5	1.2	0.990	1.00	1065	
V <sub>FR</sub>	1090	0.92	2	0	1.5	1.2	0.990	1.00	1197	
V <sub>RR</sub>	110	0.92	2	0	1.5	1.2	0.990	1.00	121	
V <sub>NW</sub>	5969							V =	6090	
V <sub>W</sub>	121							-		
VR	0.020									
	uration Ch		tics							
Minimum	maneuver lanes,	N <sub>WL</sub>		0 lc			hanges, $LC_{MIN}$		363 lc/	
-	ge density, ID			0.7 int/mi	Weaving lan	0			935 lc/	
	RF lane changes	i vi		0 lc/pc	Non-weaving				2800 lc/	
	FR lane changes			0 lc/pc	Total lane ch		-		3735 lc/	
	RR lane changes	NN		3 lc/pc	5					
Weavir	ng Segmen	t Speed,	Density, I	_evel of	1					
0	segment flow rate			6012 veh/h 8851 veh/h	Weaving inte Weaving sec	<b>,</b>			0.21 60.1 mp	
-	segment capacity	vv			60.1 mp					
0	segment v/c ratio segment density,		າເ	0.679 5.3 pc/mi/ln	, c c. w				60.1 mp	
•	ervice, LOS	U	Z	C C	Maximum we				5911	
				0			', LMAX		J711	
	segments longer			ength should I	be treated as is	olated merge	and diverge ar	eas using the	procedures of	
	, "Freeway Merge nes that exceed th			ne level of ser	vice is "F".	-	-			

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 3-B 2020 Bu	et Off & On Ramp ild 2A
Project Description SW 10th	Street SIMR				
✓ Oper.(LOS)			Des.(N)	Pla	inning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4440	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD	3	ft ft ramps/mi	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment		mph mph mph
FFS (measured) Base free-flow Speed, BFFS	70.0	mph mph	FFS	70.0	mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	c f <sub>HV</sub> x f <sub>p</sub> ) 1581 68.3 23.1 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hol	S - Speed D - Density FFS - Free-flow BFFS - Base fro	•	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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General Inf	ormation		S AND RAM							
	ormation			Site Infor						
Analyst	. = 0	~		eeway/Dir of Tr		I-95 SE				
gency or Compa	any AEC	ОМ		nction	Seg 4-Diverge to SW 10th St					
Date Performed	riod AM			risdiction alysis Year	2020 Build 2A					
<u>.</u>	n SW 10th Stree		AI	alysis i eal		2020 B				
nputs										
		Eroowov Nur	ber of Lanes, N	3						
Upstream Ad	lj Ramp	· ·		3					Downstrea	m Adj
		Ramp Numbe		1					Ramp	
Yes	On	Acceleration L	_ane Length, L <sub>A</sub>						✓ Yes	🗹 On
✓ No	Off	Deceleration I	Lane Length L <sub>D</sub>	200						
		Freeway Volu	me, V <sub>E</sub>	4440					No	Off
L <sub>up</sub> =	ft	Ramp Volume	1	1440					L <sub>down</sub> =	2400 ft
up				70.0						
V,, =	veh/h		-Flow Speed, S <sub>FF</sub>						V <sub>D</sub> =	1310 veł
-		-	low Speed, S <sub>FR</sub>	45.0						
Conversion	n to pc/h Une	<u>der Base (</u>	Conditions			_				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF :	x f <sub>HV</sub> x f <sub>r</sub>
reeway	4440	0.95		3	0	_	985	1.00	474	···· P
•			Level			_				
Ramp	1440	0.92	Level	2	0	0.	990	1.00	158	51
JpStream DownStream	1210		Laural		0	_	000	1.00		0
JownStream	1310	0.92 Merge Areas	Level	2	0	0.	990	1.00 Diverge Areas	143	00
stimation		Merge Areas			Estimat	iono		nverge Areas		
Sumation					LStimat					
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	• V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	<sub>R</sub> )P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13)	
FM =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		0.	569 using Equ	uation (Exhib	it 13-7)
/ <sub>12</sub> =	pc/h				V <sub>12</sub> =			380 pc/h		,
$V_3$ or $V_{av34}$		Equation 13	-14 or 13-17)		$V_3^{12}$ or $V_{av34}^{12}$			364 pc/h (Equ	ation 13-14	or 13_17
	2,700 pc/h? 🗌 Ye					> 2 7		Yes <b>⊡</b> No		
6 aver					0 u.	• ·				
$s v_3 0 v_{av34} > 1$	.5 * V <sub>12</sub> /2 Ye		16 12 10 or		IS V <sub>3</sub> OI V <sub>av</sub>	34 ~ 1.5		Yes 🗹 No c/h (Equation	10 16 10	10 or 12
Yes,V <sub>12a</sub> =	13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	۲ 1		13-10, 13-	10, 01 13
Capacity Cl	,	,			Capacit	v Ch		~ /		
	Actual	C	apacity	LOS F?		<u>, , , , , , , , , , , , , , , , , , , </u>	Actual	Са	pacity	LOS F
		<u>†</u>			V <sub>F</sub>		4744	Exhibit 13-8	<u> </u>	No
		E 1.11.140.0			· · · ·				_	
V		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- • <sub>R</sub>	3163	Exhibit 13-8	_	No
$V_{FO}$					V <sub>R</sub>		1581	Exhibit 13-1	0 2100	No
V <sub>FO</sub>										
	ing Merge In	I I I I I I I I I I I I I I I I I I I	rea	<u>I</u>		nterin	g Dive	rge Influen	ce Area	
	ing Merge In Actual		<b>rea</b> Desirable	Violation?		1	<b>g Dive</b> Actual	r <b>ge Influen</b> Max Desirab	1	Violation
Flow Enteri				Violation?	Flow En	/			1	Violation No
Flow Enteri	Actual	Max Exhibit 13-8	Desirable	Violation?	Flow En		Actual 3380	Max Desirab Exhibit 13-8	ole 4400:All	No
Flow Enteri V <sub>R12</sub> .evel of Se	Actual	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En V <sub>12</sub> Level of	f Serv	Actual 3380 / <b>ice De</b>	Max Desirab Exhibit 13-8 <b>terminatio</b>	ole 4400:All n (if not F	No
Flow Enteri V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.475 +	Actual rvice Detern 0.00734 v <sub>R</sub> +	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En	<i>f</i> Serv	Actual 3380 / <b>ice De</b> 4.252 + 0	Max Desirab Exhibit 13-8	ole 4400:All n (if not F	No
<i>V<sub>R12</sub></i> <i>V<sub>R12</sub></i> <i>evel of Se</i> <i>D<sub>R</sub></i> = 5.475 + <i>R</i> = (pc/mi	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + i/ln)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En V <sub>12</sub> Level of $D_R = 3^{\circ}$	<i>f</i> Serv D <sub>R</sub> = 4 1.5 (pc,	Actual 3380 7 <b>ice De</b> 4.252 + 0 /mi/ln)	Max Desirab Exhibit 13-8 <b>terminatio</b>	ole 4400:All n (if not F	No
Flow Entering $V_{R12}$ evel of Se $D_R = 5.475 + \frac{1}{R} = (pc/mi)$ OS = (Exhible)	Actual rvice Detern 0.00734 v <sub>R</sub> + i/ln) pit 13-2)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{2}$ LOS = D	<b>f Serv</b> D <sub>R</sub> = 4 1.5 (pc, (Exhit	Actual 3380 / <b>ice De</b> 4.252 + 0 /mi/In) bit 13-2)	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	ole 4400:All n (if not F	No
<i>V</i> <sub>R12</sub> <i>evel of Se</i> D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi	Actual rvice Detern 0.00734 v <sub>R</sub> + i/ln) pit 13-2)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{\circ}$ LOS = D Speed L	<b>f Serv</b> D <sub>R</sub> = 4 1.5 (pc, (Exhit	Actual 3380 / <b>ice De</b> 4.252 + 0 /mi/In) bit 13-2)	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	ole 4400:All n (if not F	No
Flow Enteri $V_{R12}$ evel of Se $D_R = 5.475 +$ $d_R = (pc/mi)$ OS = (Exhibits Speed Deter	Actual rvice Detern 0.00734 v <sub>R</sub> + i/ln) pit 13-2)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{\circ}$ LOS = D Speed L	<i>f</i> Serv D <sub>R</sub> = 4 1.5 (pc, (Exhit	Actual 3380 / <b>ice De</b> 4.252 + 0 /mi/In) bit 13-2)	Max Desirat Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0	ole 4400:All n (if not F	No
Flow Enteri $V_{R12}$ evel of Se $D_R = 5.475 +$ R = (pc/mi) OS = (Exhib) Speed Dete $I_S = (Exibit)$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{2}$ LOS = D Speed L $D_s = 0.$	<b>f Serv</b> D <sub>R</sub> = 4 1.5 (pc) (Exhilt <b>Deter</b> 440 (E	Actual 3380 7.252 + 0 /mi/In) pit 13-2) <b>minatic</b>	Max Desirab Exhibit 13-8 termination .0086 V <sub>12</sub> - 0.0	ole 4400:All n (if not F	No
Flow Enteri $V_{R12}$ Evel of Se $D_R = 5.475 +$ $d_R = (pc/mi)$ OS = (Exhibit Speed Dete $d_S = (Exibit)$ $R^= mph (E)$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11) Exhibit 13-11)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{\prime}$ LOS = D Speed L $D_s = 0.$ $S_R = 57$	<i>f</i> Serv D <sub>R</sub> = 4 1.5 (pc, (Exhit Deterr .440 (E 7.7 mph	Actual 3380 2.252 + 0 /mi/In) bit 13-2) <b>minatic</b> xhibit 13- (Exhibit	Max Desirat Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0 000 001 12) 13-12)	ole 4400:All n (if not F	No
Flow Entering $V_{R12}$ Evel of Second $D_R = 5.475 + 0$ $D_R = (pc/minic)$ OS = (Exhinic) Expeed Detecond $M_S = (Existing)$ $M_S = (Existing)$ $M_S = (Existing)$ $M_S = (mph) (Existing)$ $M_S = (mph) (Existing)$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)	Max Exhibit 13-8 mination (	Desirable if not F)	Violation?	Flow En $V_{12}$ Level of $D_R = 3^{\circ}$ LOS = D           Speed L $D_s = 0.$ $S_R = 57$ $S_0 = 75$	<i>f</i> Serv D <sub>R</sub> = 4 1.5 (pc. (Exhit <b>Deterr</b> .440 (E 7.7 mph 5.4 mph	Actual 3380 4.252 + 0 (mi/In) bit 13-2) <b>minatic</b> xhibit 13-	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.1 000 12) 13-12) 13-12)	ole 4400:All n (if not F	No

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 5-B 2020 Bu	et Off & On Ramps ild 2A
Project Description SW 10th	Street SIMR				
Oper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	3000	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	s f <sub>HV</sub> x f <sub>p</sub> ) 1068 70.0 15.3 B	pc/h/ln mph pc/mi/ln	Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
-	_		Required Number of Lanes, N		
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hou	S - Speed D - Density FFS - Free-flow BFFS - Base free	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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	RA	MPS AND	RAMP JUN	CTIONS W	ORKSHE	ET			
General In	formation			Site Infor	mation				
Analyst			Fr	eeway/Dir of Tra	avel I-	-95 SB			
Agency or Comp	oany AEC	OM	Ju	nction	S	Seg 6-Merge fro	m Hillsboro E&W		
Date Performed				risdiction					
Analysis Time P			An	alysis Year	2	020 Build 2A			
	ion SW 10th Stree	et SIMR							
nputs								1	
Jpstream Adj R	amp		ber of Lanes, N	3				Downstre	eam Adj
		Ramp Number		1				Ramp	
✓ Yes	On	Acceleration L	ane Length, L <sub>A</sub>	300				🗌 Yes	On
No 🗸	Off	Deceleration L	ane Length L <sub>D</sub>					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	3000					
-up = 24	00 ft	Ramp Volume	, V <sub>R</sub>	1310				L <sub>down</sub> =	ft
			Flow Speed, S <sub>FF</sub>	70.0				V	1.71
/ <sub>u</sub> = 14	40 veh/h		ow Speed, S <sub>FR</sub>	50.0				V <sub>D</sub> =	veh/h
Conversio	n to pc/h Un								
		I I		0/ <b>T</b>	0/ D	£	6		<b>F f</b>
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v – v/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway	3000	0.95	Level	3	0	0.985	1.00		3205
Ramp	1310	0.92	Level	2	0	0.990	1.00	,	1438
UpStream	1440	0.92	Level	2	0	0.990	1.00		1581
DownStream									
- time of ion		Merge Areas			<b>F</b> otimotic		Diverge Areas		
Estimation	1 OF V <sub>12</sub>				Estimatio	on or v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )				V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>		
-EQ =	1339.80	0 (Equation	13-6 or 13-7)		L <sub>EQ</sub> =	12	(Equation 13-		13)
P <sub>FM</sub> =	0.586	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> = using Equation (Exhibit 13-7)				
/ <sub>12</sub> =	1878	pc/h			· FD V <sub>12</sub> =		pc/h		101)
$V_3$ or $V_{av34}$	1327	pc/h (Equatio	on 13-14 or 13-		V <sub>12</sub> pc/n V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17)				
	17)				Is $V_3$ or $V_{av34}$ > 2,700 pc/h? $\Box$ Yes $\Box$ No				
Is V <sub>3</sub> or V <sub>av34</sub> >	2,700 pc/h? 🗌 Ye	s 🗹 No							
Is $V_3$ or $V_{av34}$ >	1.5 * V <sub>12</sub> /2 Ve				IS V <sub>3</sub> or V <sub>av34</sub>	<sub>1</sub> > 1.5 ° V <sub>12</sub> /2	Yes No	- 10 10	10.40
f Yes,V <sub>12a</sub> =			on 13-16, 13-		If Yes,V <sub>12a</sub> =		pc/h (Equation 13-19)	n 13-16, '	13-18, or
120		13-19)			Conceitu		,		
Capacity C			•		Capacity	u"			
	Actual		apacity	LOS F?	N N	Actua		pacity	LOS F?
					V <sub>F</sub>		Exhibit 13-8	_	_
$V_{FO}$	4643	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub> -	V <sub>R</sub>	Exhibit 13-8		
					V <sub>R</sub>		Exhibit 13- 10	-	
Low Ento	ring Morgo Ir	I I	<u></u>			l toring Dive	-		<u> </u>
	ring Merge In Actual	Ú.	<b>rea</b> Desirable	Violation?		Actual	Arge Influen Max Desi		Violation?
V <sub>R12</sub>	3316	Exhibit 13-8	4600:All	No	V <sub>12</sub>	710100	Exhibit 13-8		
	ervice Deterr			NO		Sorvico D	eterminatio	n (if no	+ <u>F</u> )
	75 + 0.00734 v <sub>R</sub> +	1	1				0.0086 V <sub>12</sub> - 0.		(7)
		0.0070 v <sub>12</sub> - 0.0					0.0000 v <sub>12</sub> - 0.	.009 L <sub>D</sub>	
it i	pc/mi/ln)					c/mi/ln)			
	hibit 13-2)				· ·	xhibit 13-2)			
Speed Det	ermination				Speed D	eterminati	on		
M <sub>S</sub> = 0.398	(Exibit 13-11)				D <sub>s</sub> = (Ex	hibit 13-12)			
-	nph (Exhibit 13-11)				S <sub>R</sub> = mpl	h (Exhibit 13-12	!)		
	nph (Exhibit 13-11)					h (Exhibit 13-12	!)		
	nph (Exhibit 13-13)				°	h (Exhibit 13-13			

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 7-Be 2020 Bu	et On Ramps ild 2A
Project Description SW 10th	Street SIMR				·
✓ Oper.(LOS) Flow Inputs			Des.(N)		anning Data
Volume, V AADT Peak-Hr Prop. of AADT, K	4310	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub>	0.95 3 0	
Peak-Hi Piop. of AAD1, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	u Level mi	
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance		ft ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured) Base free-flow Speed, BFFS	70.0	mph mph	FFS	70.0	mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS	( f <sub>HV</sub> x f <sub>p</sub> ) 1535 68.7 22.3 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre		E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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Job: SW 10th Street SIMR Analyst: AECOM

Location:	Seg 8: I-95 Southbound On-Ramp from SW 10th Street EB & WB						
Analysis Period:	AM Peak Hour						
Analysis Year:	2020 Build 2A						
4,310	→ 5,270						

960						
	PHF =	0.95				
	v <sub>fr</sub> =	5,270	vph			
	v <sub>r</sub> =	960	vph			
	v <sub>f</sub> =	4,310				
Upstream Freeway	Tr % =	3%				
Ramp	Tr % =	2%				
Downstream Freeway	Tr % =	3%				
Freeway	f <sub>HV</sub> =	1/(1+P <sub>1</sub>	(E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	1)) =	0.985	
Ramp	f <sub>HV</sub> =	1/(1+P₁	(E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	1)) =	0.9901	
flat terrain	<b>Ε</b> <sub>τ</sub> =	1.5				
	RV % =	0				
Driver Population adj.	f <sub>P</sub> =	1.000				
	V <sub>fr</sub> =	=v <sub>fr</sub> /(PH	$IF)(f_{HV})(f_{P}) =$	5,631	pc/h	
	V <sub>r</sub> =	=v <sub>r</sub> /(PH	$F)(f_{HV})(f_{P}) =$	1,021	pc/h	
	V <sub>f</sub> =	=v <sub>f</sub> /(PH	$F)(f_{HV})(f_{P}) =$	4,605	pc/h	
No. lanes upstream of ramp	N =	3				

<u>No. Ln</u>	Capacity Check (see Exhibits 25-3 and 25-7):	Maximum	Actual	V/c	LOS F?
4	Fwy downstream of ramp (assume 70 mph free-flow speed) =	9,600	5,631	0.59	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	4,605	0.64	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,021	0.49	No

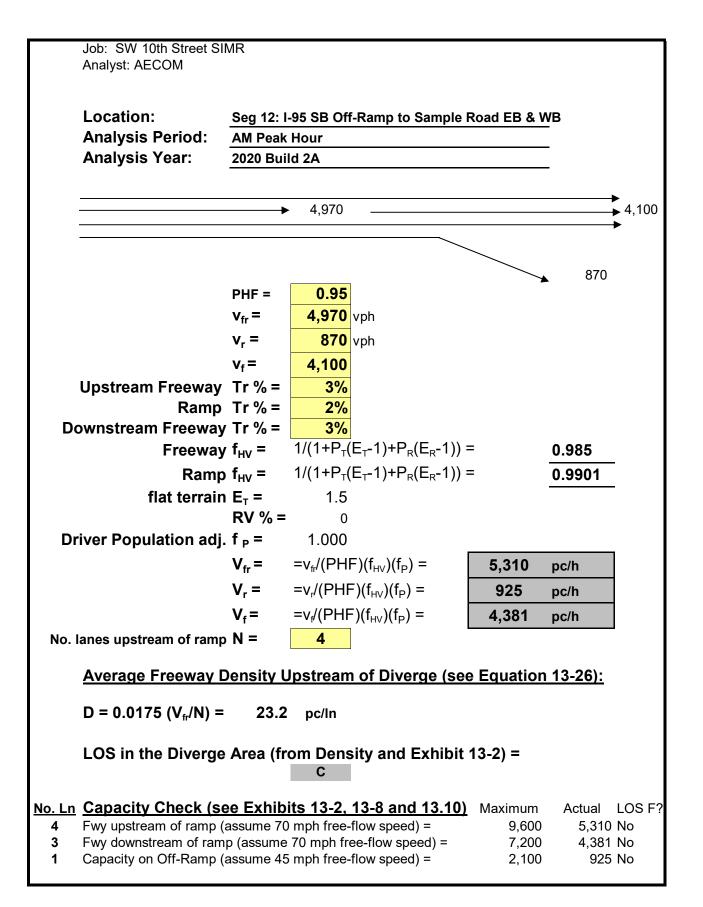
	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 9-B 2020 Bu	et 10th & Exit to Exp ild 2A
Project Description SW 10th	Street SIMR				
✓ Oper.(LOS) Flow Inputs			Des.(N)		anning Data
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	5270	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f <sub>∟w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1408 69.5 20.3 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ $S$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hol	S - Speed D - Density FFS - Free-flow BFFS - Base frout ur volume		E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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		RAI		RAMP JUN	CTIONS W	ORKSHE	ET				
Genera	l Infor	nation			Site Infor	mation					
Analyst				Fr	eeway/Dir of Tr	avel I-	-95 SB				
Agency or (		AECO	MC		nction	S	Seg 10-M	erge from	Ex to GP		
Date Perfor					risdiction						
Analysis Tir		AM SW 10th Stree		Ar	alysis Year		2020 Build	12A			
Inputs	scription	SW TOUT SUPE									
			Freeway Num	ber of Lanes, N	4					<b>D</b> (	A 11
Jpstream A	Adj Ramp		Ramp Numbe		1					Downstre Ramp	eam Adj
Yes	🗌 On		· ·	Lane Length, $L_A$	600					•	
				Lane Length L <sub>D</sub>	000					✓ Yes	🗌 On
🗹 No	Off			÷ D	E070					🗌 No	✓ Off
-	ft		Freeway Volu		5270					L <sub>down</sub> =	1150 ft
-up =	п		Ramp Volume	i v	320					-down	1100 10
√ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$	70.0					V <sub>D</sub> =	620 veh/h
				ow Speed, S <sub>FR</sub>	50.0					_	
Conver	<u>rsion to</u>		der Base	Conditions	1						
(pc/	/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>H</sub>	v	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway		5270	0.95	Level	3	0	0.98	5	1.00		5631
Ramp		320	0.92	Level	2	0	0.990		1.00		351
UpStream											
DownStrea	am	620	0.92	Level	2	0	0.990	)	1.00		681
			Merge Areas						verge Areas		
Estimat	tion of	v <sub>12</sub>				Estimatio	on of v	12			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V = V	<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> )	\P	
- <sub>EQ</sub> =		(Equa	ation 13-6 o	r 13-7)		_			quation 13-		12)
P <sub>FM</sub> =		0.174	using Equa	tion (Exhibit 13-6)		L <sub>EQ</sub> = P <sub>FD</sub> =			-		•
V <sub>12</sub> =		979 p	c/h			P <sub>FD</sub> = using Equation (Exhibit 13-7) V <sub>12</sub> = pc/h					13-7)
		•		on 13-14 or 13-		V <sub>12</sub> pc/n V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17)					17)
$V_3$ or $V_{av34}$		17)				Is $V_3$ or $V_{av34}$ > 2,700 pc/h? $\Box$ Yes $\Box$ No					
		) pc/h? 🗌 Yes									
Is $V_3$ or $V_{a}$	<sub>v34</sub> > 1.5 *	V <sub>12</sub> /2 Ves					1 2 1.5		Yes 🔲 No :/h (Equatior	12 16	13 19 or
f Yes,V <sub>12a</sub>	=			on 13-16, 13-		If Yes,V <sub>12a</sub> =		μα 13-		115-10,	13-10, 01
Capaci		18, or	13-19)			Capacity	Choc		,		
capaci		Actual		Capacity	LOS F?			Actual	Car	acity	LOS F?
		notuui		Japaony	2001:	V <sub>F</sub>		notaai	Exhibit 13-8		20011
.,						$V_{FO} = V_F$ -	. V		Exhibit 13-8	_	
V <sub>F</sub>	0	5982	Exhibit 13-8		No		<sup>v</sup> R		Exhibit 13-	_	
						V <sub>R</sub>			10		
Flow Ei	ntering	Merge In	fluence A	rea	•	Flow Ent	tering	Diverg	e Influen	ce Area	3
	Ĩ	Actual	1 C	Desirable	Violation?		Act	r –	Max Desi		Violation?
V <sub>R1</sub>	12	2603	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	nination (	if not F)		Level of	Servio	ce Dete	erminatio	n (if no	t F)
D <sub>R</sub> =	= 5.475 + (	).00734 v <sub>R</sub> + (	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D	<sub>R</sub> = 4.2	52 + 0.0	086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
	21.9 (pc/mi						c/mi/ln)			2	
	C (Exhibit 1						xhibit 13	3-2)			
	•	ination				Speed D			1		
							hibit 13-1		•		
•	).314 (Exib						h (Exhibi				
		Exhibit 13-11)									
0	• •	Exhibit 13-11)					h (Exhibit				
		Exhibit 13-13)					h (Exhibi				
nt © 2016 U	<b>Jniversity</b> of	Florida, All Righ	nts Reserved			HCS2010 <sup>™</sup>	Version	6 00		Generat	ed: 6/17/2020

		RAMP	S AND RAM			RKS	HEET			
General Info	ormation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 SE				
gency or Compar	ny AEC	MC		nction		Seg 11	- Diverge t	o Express		
ate Performed	iad AM			risdiction	2020 Build 2A					
nalysis Time Peri	iod AM N SW 10th Stree		An	alysis Year		2020 B	ulia za			
nputs										
-	_	Freeway Num	ber of Lanes, N	4					_	
Upstream Adj	Ramp	Ramp Numbe		7					Downstrea Bomp	m Adj
✓ Yes	✓ On			1					Ramp	
			ane Length, L <sub>A</sub>						Yes	🗌 On
No	Off		_ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	5590						
L <sub>up</sub> =	1150 ft	Ramp Volume	e, V <sub>R</sub>	620					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V -	veh/h
$V_u = $	320 veh/h	-	ow Speed, S <sub>FR</sub>	45.0					V <sub>D</sub> =	ven/n
Conversion	to pc/h Une	-								
	<u>v</u>			a/ <del>-</del>	A/ 5		<i>c</i>	c.		
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x t <sub>HV</sub> x t <sub>p</sub>
reeway	5590	0.95	Level	3	0	0.	985	1.00	597	'2
Ramp	620	0.92	Level	2	0	0.	990	1.00	68	1
JpStream	320	0.92	Level	2	0	0.	990	1.00	35	1
ownStream										
		Merge Areas						Diverge Areas		
stimation of	of v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )					V <sub>12</sub> =	: V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
<sub>EQ</sub> =	12 1	ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1	5	
		Equation (E						436 using Equ		
FM =	•				P <sub>FD</sub> =					10-7)
12 =	pc/h				V <sub>12</sub> =			988 pc/h		
<sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			192 pc/h (Equ	ation 13-14	or 13-17
	700 pc/h? 🗌 Ye							Yes 🗹 No		
s V <sub>3</sub> or V <sub>av34</sub> > 1.	5 * V <sub>12</sub> /2 Ye				Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 1.5		Yes 🗹 No		
Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equation	13-16, 13-	18, or 13
Capacity Ch	13-19)	1			Capacit		19 00ks	9)		
apacity Ch	Actual		apacity	LOS F?		y ch	Actual	<u> </u>	pacity	LOS F
	Actual	<del>l ĭ</del>	apacity	LUGT	V <sub>F</sub>		5972	Exhibit 13-8		
									-	No
V <sub>FO</sub>		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	5291	Exhibit 13-8	9600	No
10					V <sub>R</sub>		681	Exhibit 13-1	2100	No
10					1		a Divo	rao Influon	ce Area	
	ng Merge In	fluence A	rea		Flow En	iterin	y Dive	ige innuen		
	ng Merge In Actual		<b>rea</b> Desirable	Violation?	Flow En	1	Actual	Max Desirab		Violation
low Enterii				Violation?	Flow En	/				Violation No
F <b>low Enteri</b> i V <sub>R12</sub>	Actual	Max Exhibit 13-8	Desirable	Violation?	V <sub>12</sub>		Actual 2988	Max Desirab Exhibit 13-8	le 4400:All	No
Flow Enterin V <sub>R12</sub> .evel of Ser	Actual	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	V <sub>12</sub> Level of	f Serv	Actual 2988 /ice De	Max Desirab Exhibit 13-8 <b>terminatio</b>	le 4400:All <b>n (if not F</b>	No
Flow Enterin V <sub>R12</sub> evel of Ser D <sub>R</sub> = 5.475 +	Actual <b>vice Detern</b> 0.00734 v <sub>R</sub> +	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	V <sub>12</sub> Level of	<i>f</i> Serv	Actual 2988 / <b>ice De</b> 1.252 + 0	Max Desirab Exhibit 13-8	le 4400:All <b>n (if not F</b>	No
V <sub>R12</sub> evel of Ser           D <sub>R</sub> = 5.475 +           R =         (pc/mi/	Actual <b>Tvice Detern</b> 0.00734 v <sub>R</sub> + /In)	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ Level of $D_R = 30$	<i>f</i> Serv D <sub>R</sub> = 4 0.7 (pc,	Actual 2988 7 <b>ice De</b> 252 + 0 /mi/In)	Max Desirab Exhibit 13-8 <b>terminatio</b>	le 4400:All <b>n (if not F</b>	No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 + \frac{1}{R} = \frac{pc/mi}{0S}$	Actual <b>vice Detern</b> 0.00734 v <sub>R</sub> + (In) it 13-2)	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	V <sub>12</sub> Level of D <sub>R</sub> = 30 LOS = D	<b>f Serv</b> D <sub>R</sub> = 4 0.7 (pc, (Exhit	Actual 2988 <b>/ice De</b> 4.252 + 0 /mi/In) Dit 13-2)	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	le 4400:All <b>n (if not F</b>	No
VR12           evel of Ser           DR = 5.475 +           R =         (pc/mi/)           OS =         (Exhibit)           Speed Dete	Actual <b>vice Detern</b> 0.00734 v <sub>R</sub> + (In) it 13-2)	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ Level of $D_R = 30$ LOS = D Speed L	<i>f</i> Serv D <sub>R</sub> = 4 0.7 (pc, (Exhit	Actual 2988 2007 De 2007 DE 20	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0	le 4400:All <b>n (if not F</b>	No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 + \frac{1}{R} = \frac{pc/mi}{0S}$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + (In) it 13-2) <b>rmination</b>	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ Level of $D_R = 30$ LOS = D Speed L $D_s = 0.$	<i>f</i> Serv D <sub>R</sub> = 4 0.7 (pc, (Exhit	Actual 2988 <b>/ice De</b> 4.252 + 0 /mi/In) Dit 13-2)	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0	le 4400:All <b>n (if not F</b>	No
Flow Enterin $V_{R12}$ evel of Ser $D_R = 5.475 +$ R = (pc/mi/) OS = (Exhibit Speed Detention $R_S = (Exibit)$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + (In) it 13-2) <b>rmination</b>	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ Level of $D_R = 30$ LOS = D Speed L $D_s = 0.$	<b>f Serv</b> D <sub>R</sub> = 4 0.7 (pc) (Exhit 359 (E	Actual 2988 2007 De 2007 DE 20	Max Desirab Exhibit 13-8 termination .0086 V <sub>12</sub> - 0.0	le 4400:All <b>n (if not F</b>	No
Flow Enterin $V_{R12}$ Evel of Ser $D_R = 5.475 +$ $R^{=}$ (pc/mi/ OS = (Exhibit Speed Detend $R^{=}$ mph (Existic	Actual <b>vice Detern</b> 0.00734 v <sub>R</sub> + (In) it 13-2) <b>rmination</b> 13-11) xhibit 13-11)	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ <i>Level of</i> $D_R = 30$ <i>LOS = D</i> <i>Speed L</i> $D_s = 0$ . $S_R = 59$	<i>f</i> Serv D <sub>R</sub> = 4 0.7 (pc, (Exhit <b>Deterr</b> 359 (E 9.9 mph	Actual 2988 4.252 + 0 (mi/In) pit 13-2) <b>minatic</b> xhibit 13-	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.0 000 000 012) 13-12)	le 4400:All <b>n (if not F</b>	No
Flow Enterin $V_{R12}$ Evel of Ser $D_R = 5.475 +$ R = (pc/mi/) OS = (Exhibit) $Speed Detends P_S = (Exibit)R_R = mph (Exist)R_R = mph (Exist)$	Actual <b>rvice Detern</b> 0.00734 v <sub>R</sub> + /In) it 13-2) <b>rmination</b> 13-11)	Max Exhibit 13-8	Desirable <i>if not F)</i>	Violation?	$V_{12}$ <i>Level of</i> $D_R = 30$ <i>LOS = D</i> <i>Speed L</i> $D_s = 0.$ $S_R = 59$ $S_0 = 79$	<i>f</i> Serv D <sub>R</sub> = 4 0.7 (pc) (Exhit <b>Deterr</b> 359 (E 9.9 mph 5.5 mph	Actual 2988 2252 + 0 /mi/In) Dit 13-2) <b>minatic</b> xhibit 13- (Exhibit	Max Desirab Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.1 000 -12) 13-12) 13-12)	le 4400:All <b>n (if not F</b>	No



	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 13-l 2020 Bu	Bet Off & On Ramps ild 2A
Project Description SW 10th	Street SIMR				
Oper.(LOS)			Des.(N)	∐ Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	4100	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	5	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			
LOS and Performance I	Veasures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	r f <sub>HV</sub> x f <sub>p</sub> ) 1460 69.2 21.1 C	pc/h/ln mph pc/mi/ln	Design (N) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S D = $v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service	S - Speed D - Density FFS - Free-flow BFFS - Base free	•	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
DDHV - Directional design ho					enerated: 6/17/2020 11:2

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_			FREEWA	WEAV		_			
Genera	al Informati	on			Site Info	rmation			
-	ime Period	AECO AM			Freeway/Dir Weaving Seg Analysis Yea	gment Locati		B 4- Bet Sampl Build 2A	e & Copans
Project De Inputs	scription SW 10t	th Street SIM	२						
Weaving n Weaving s Freeway fr	onfiguration umber of lanes, I egment length, L ee-flow speed, F rsions to p	s FS	r Base Co	One-Sided 4 2520ft 70 mph	Segment typ Freeway min Freeway ma Terrain type	imum speed			Freewa 240 Lev
CONVE	V (veh/h)	PHF	Truck (%)	RV (%)	<b>Β</b> Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	3485	0.95	3	0	1.5	1.2	0.985	1.00	3723
V <sub>RF</sub>	1770	0.92	2	0	1.5	1.2	0.990	1.00	1943
V <sub>FR</sub>	615	0.92	2	0	1.5	1.2	0.990	1.00	675
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0
V <sub>NW</sub>	3723							V =	6341
V <sub>W</sub>	2618	1						•	
VR	0.413								
Config	uration Cha	aracteris	tics						
Minimum ı	maneuver lanes,	N <sub>WL</sub>		2 lc	Minimum we	aving lane c	hanges, LC <sub>MIN</sub>		lc
Interchang	ge density, ID			0.7 int/mi	Weaving lan	e changes, L	_C <sub>w</sub>		lc
Minimum I	RF lane changes	, LC <sub>RF</sub>		1 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		lc
Minimum I	FR lane changes	, LC <sub>FR</sub>		1 lc/pc	Total lane changes, LC <sub>ALL</sub>				lc
Minimum I	RR lane changes	, LC <sub>RR</sub>		lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		
Weavir	ng Segmen	t Speed,	Density,	Level of	Service,	and Cap	pacity		
Weaving s	segment flow rate segment capacity segment v/c ratio			6261 veh/h 5727 veh/h 1.093	Ŭ,	ensity factor, gment speed aving speed,	, S		ՠբ ՠբ
•	segment density,	D		pc/mi/ln	Average nor	n-weaving sp	eed, S <sub>NW</sub>		m
Level of S	ervice, LOS			F	Maximum w	eaving length	n, L <sub>MAX</sub>		6826
Notes									

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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	DAJIC F	NELWAI JE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 1-B 2020 Bu	et Hillsboro & Palmetto iild 2A
Project Description SW 10th	n Street SIMR				
Oper.(LOS)			Des.(N)		anning Data
<i>Flow Inputs</i> Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4530	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
Calculate Flow Adjuste	onto		Up/Down %		
Calculate Flow Adjustn	1.00		F	1.2	
f <sub>ρ</sub> Ε <sub>Τ</sub>	1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.985	
Speed Inputs	1.0		Calc Speed Adj and FFS		
Lane Width		ft		-	
Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ramps/mi mph mph	f <sub>Lw</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS		pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ $S$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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0	11.6		REEWAY	WEAV		-			
Genera	I Informati	on			Site Info	rmation			
Analyst Agency/Co Date Perfor Analysis Ti	rmed	AECON PM	Л		Freeway/Dir Weaving Seg Analysis Yea	gment Locati		3 -Bet On from Build 2A	Exp & Off
	scription SW 10	th Street SIMF	R						
Inputs									
Weaving no Weaving se	onfiguration umber of lanes, l egment length, L ee-flow speed, F	S		Two-Sided 4 3900ft 70 mph	Segment type Freeway min Freeway may Terrain type	imum speed			Freewa 1 240 Lev
Conver	sions to p	c/h Unde	r Base Co	ondition	5		-		-
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	3600	0.95	3	0	1.5	1.2	0.985	1.00	3846
V <sub>RF</sub>	970	0.92	2	0	1.5	1.2	0.990	1.00	1065
V <sub>FR</sub>	930	0.92	2	0	1.5	1.2	0.990	1.00	1021
V <sub>RR</sub>	110	0.92	2	0	1.5	1.2	0.990	1.00	121
V <sub>NW</sub>	5932							V =	6053
V <sub>W</sub>	121								-
VR	0.020								
Config	uration Ch	aracteris	tics		1				
Minimum n	naneuver lanes,	N <sub>WL</sub>		0 Ic	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>		363 lc/
•	e density, ID			0.7 int/mi	Weaving lan	•			935 lc/
	RF lane changes			0 lc/pc	Non-weaving	g lane chang	jes, LC <sub>NW</sub>		2785 lc/
Minimum F	R lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AI</sub>	L		3720 lc/
Minimum F	RR lane changes	s, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle ind	ex, I <sub>NW</sub>		161
Weavin	ig Segmen	t Speed,	Density, I	_evel of	Service,	and Ca	pacity		
5	egment flow rate	-		5975 veh/h	Weaving inte	5			0.21
	egment capacity	VV		8851 veh/h	Weaving seg				60.1 mp
0	egment v/c ratio		0	0.675	Average wea				60.2 mp
°,	egment density, ervice, LOS	U	25	5.2 pc/mi/ln C	Average non				60.1 mp
				C	Maximum we	eaving lengt	n, L <sub>MAX</sub>		5912
	segments longer f "Freeway Merge			ength should b	be treated as is	olated merge	and diverge ar	eas using the	procedures of

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		Site Information		
AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 3-Be 2020 Bui	et Off & On Ramp Id 2A
h Street SIMR				
		Des.(N)	🗌 Plai	nning Data
4570	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
nents				
1.00		E <sub>R</sub>	1.2	
1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
		Calc Speed Adj and FFS	6	
3 70.0	ft ft ramps/mi mph	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
Moacuroc	тірп	Docian (N)		
x f <sub>HV</sub> x f <sub>p</sub> ) 1628 67.9 24.0 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
		Factor Location		
BFFS - Base fre	-	f <sub>p</sub> - Page 11-18		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
	PM         h Street SIMR         4570         4570         nents         1.00         1.5         3         70.0         Measures         (https://www.str.gov/action/optical/strains/strai	PM         h Street SIMR         4570       veh/h         4570       veh/h         veh/h       veh/h         nents       1.00         1.5       ft         ft       ft         3       ramps/mi         70.0       mph         Measures       mph         K f <sub>HV</sub> × f <sub>p</sub> ) 1628       pc/h/ln         67.9       mph         24.0       pc/mi/ln         C       S         S       - Speed         D       Density         FFS - Free-flow speed         BFFS - Base free-flow speed	AECOM $Fröm/ToJurisdictionPMAnalysis Yearh Street SIMR\Box Des.(N)4570veh/hPeak-Hour Factor, PHF%Trucks and Buses, PT%RVs, PRGeneral Terrain:Grade % LengthUp/Down%1.00ERftft1.00ER(LC1.5ftftftft3ramps/miramps/mi70.0mphmphK24.0Cpc/h/lnpc/mi/lnCSCSpeedpc/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSCSpeedPC/mi/lnCSDPCSDPCSDPCSDPCSDPCSDPCSDPCSDPCSDPCSDPCSPPCSP$	AECOMFrom/ToSeg 3-BePMAnalysis Year2020 Buih Street SIMRDes.(N)Plan4570veh/hPeak-Hour Factor, PHF0.95veh/day%Trucks and Buses, PT3%RVs, PR0General Terrain:Level0General Terrain:Level1.00ER1.21.5ftfLC1.00FFS70.01.5ftfLC1.00mphFFS70.0mphftfLCramps/miTRD Adjustment70.0mphFFS70.0MeasuresDesign (N)Design LOSvp (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )SDesign LOS24.0pc/mi/ln67.9mph24.0pc/mi/lnCFactor LocationS- SpeedD - DensityERFFS - Free-flow speedERBFFS - Base free-flow speedERar volumeCo, S, FFS, vp - Exhibits 11-2, 11-3

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General Inf	ormation		S AND RAM							
	ormation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 SB				
gency or Compa Date Performed	any AEC	OM		nction		Seg 4-L	liverge to	SW 10th St		
nalysis Time Pe	eriod PM			risdiction alysis Year		2020 B				
<u> </u>	on SW 10th Stree		AI	Idiysis Tedi		2020 D				
nputs										
		Eroowov Nur	ber of Lanes, N	3						
Upstream Ac	Jj Ramp	,		3					Downstrea	m Adj
		Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On	Acceleration L	ane Length, L <sub>A</sub>						🗹 Yes	🗹 On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200						
		Freeway Volu	me, V <sub>⊏</sub>	4570					🗌 No	Off
L <sub>up</sub> =	ft	Ramp Volume	1	1210					L <sub>down</sub> =	2400 ft
up										
V,, =	veh/h	-	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	1470 veł
4		-	ow Speed, S <sub>FR</sub>	45.0						
Conversior	n to pc/h Un	<u>der Base (</u>	Conditions		1					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>n</sub>
reeway	4570	0.95		3	0		985	۹ 1.00	488	1
•			Level		-	_				
Ramp	1210	0.92	Level	2	0	0.	990	1.00	132	28
JpStream DownStream	1470	0.92		2	0		000	1.00	16	1.4
JownStream	1470	Merge Areas	Level	Ζ	0	0.	990	Diverge Areas	16	14
stimation		Merge Areas			Estimat	iono		nverge Aleas		
Sumation					LSumau					
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	• V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	<sub>R</sub> )P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13)	)
FM =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		0.	577 using Equ	uation (Exhib	oit 13-7)
	pc/h				V <sub>12</sub> =		3	379 pc/h		
<sup>12</sup> 3 or V <sub>av34</sub>	•	(Equation 13	-14 or 13-17)		$V_3^{12}$ or $V_{av34}^{12}$			504 pc/h (Equ	ation 13-14	or 13-17
	2,700 pc/h? 🗌 Ye					> 2 7		⊇Yes ☑No		
0 4101						• ·				
$s v_3 0 v_{av34} > 1$	1.5 * V <sub>12</sub> /2 Ye		16 12 10 or		IS V <sub>3</sub> OF V <sub>av</sub>	<sub>34</sub> ~ 1.5		Yes 🗹 No c/h (Equation	10 16 10	10 or 12
Yes,V <sub>12a</sub> =	13-19		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		9)	13-10, 13-	10, 01 13
Capacity C		/			Capacit	v Che		- /		
	Actual	0	apacity	LOS F?		<b>,</b>	Actual	Са	pacity	LOS F
		<u>† </u>			V <sub>F</sub>		4883	Exhibit 13-8	<u> </u>	No
V					· · · · ·				_	_
V <sub>FO</sub>		Exhibit 13-8			$V_{FO} = V_{F}$	- • <sub>R</sub>	3555	Exhibit 13-8	-	No
					V <sub>R</sub>		1328	Exhibit 13-1	0 2100	No
low Enter	ing Merge In	nfluence A	rea		Flow En	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		ŀ	ctual	Max Desirab	le	Violation
		Exhibit 13-8			V <sub>12</sub>	3	379	Exhibit 13-8	4400:All	No
			:f		1	f Serv	vice De	terminatio	n (if not l	=)
V <sub>R12</sub>	 rvice Deterr	nination (i	IT NOT F)							/
V <sub>R12</sub> .evel of Se	ervice Deterr • 0.00734 v p +					D <sub>D</sub> = 4	.232 + 0	$.0000 V_{10} - 0.$	009 L <sub>D</sub>	
V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.475 +	- 0.00734 v <sub>R</sub> +							.0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi	- 0.00734 v <sub>R</sub> + i/ln)				D <sub>R</sub> = 31	1.5 (pc/	mi/ln)	.0000 v <sub>12</sub> - 0.	009 L <sub>D</sub>	
V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.475 + <sub>R</sub> = (pc/mi OS = (Exhib	• 0.00734 v <sub>R</sub> + i/ln) pit 13-2)				D <sub>R</sub> = 31 LOS = D	1.5 (pc/ (Exhit	mi/ln) vit 13-2)		009 L <sub>D</sub>	
V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.475 + D <sub>R</sub> = (pc/mi OS = (Exhib	- 0.00734 v <sub>R</sub> + i/ln)				D <sub>R</sub> = 31 LOS = D <b>Speed L</b>	1.5 (pc/ (Exhit <b>Deter</b>	mi/ln) vit 13-2) <b>minatic</b>	on	009 L <sub>D</sub>	
V <sub>R12</sub> <b>.evel of Se</b> D <sub>R</sub> = 5.475 + D <sub>R</sub> = (pc/m) OS = (Exhib Speed Dete	• 0.00734 v <sub>R</sub> + i/ln) pit 13-2)				D <sub>R</sub> = 31 LOS = D <b>Speed L</b>	1.5 (pc/ (Exhit <b>Deter</b>	mi/ln) vit 13-2)	on	009 L <sub>D</sub>	
$V_{R12}$ <b>evel of Se</b> $D_R = 5.475 + 0$ R = (pc/m) OS = (Exhit) <b>Speed Dete</b> $N_S = (Exibit)$	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)				$D_{R} = 31$ $LOS = D$ $Speed L$ $D_{s} = 0.4$	1.5 (pc/ (Exhik <b>Deter</b> i 418 (E:	mi/ln) vit 13-2) <b>minatic</b>		009 L <sub>D</sub>	
$V_{R12}$ <b>evel of Se</b> $D_R = 5.475 +$ R = (pc/m) OS = (Exhite) <b>Speed Dete</b> $R^{=}$ (Exibi	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11) Exhibit 13-11)				$D_{R} = 31$ $LOS = D$ $Speed L$ $D_{s} = 0.0$ $S_{R} = 58$	1.5 (pc/ (Exhik <b>Deter</b> 418 (E: 3.3 mph	mi/In) bit 13-2) <b>minatio</b> khibit 13 (Exhibit	-12) 13-12)	009 L <sub>D</sub>	
$V_{R12}$ <b>evel of Se</b> $D_R = 5.475 +$ R = (pc/mi) OS = (Exhik) <b>Speed Dete</b> $S_R = (Exibi)^2$ $R_R = mph (E)$ $0^2 = mph (E)$	- 0.00734 v <sub>R</sub> + i/ln) bit 13-2) <b>ermination</b> t 13-11)				$D_{R} = 31$ LOS = D <b>Speed L</b> $D_{s} = 0.$ $S_{R} = 58$ $S_{0} = 74$	1.5 (pc/ (Exhit <b>Detern</b> 418 (E: 3.3 mph 4.8 mph	mi/ln) vit 13-2) <b>minatic</b> khibit 13	-12) 13-12) 13-12)		

Site InformationHighway/Direction of Travel From/To Jurisdiction Analysis YearDes.(N)Peak-Hour Factor, PHF %Trucks and Buses, PT %RVs, PR General Terrain: Grade % Length Up/Down %ER $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS $f_{LW}$	2020 Build Plann 0.95 3 0 Level mi 1.2 0.985	Off & On Ramps
From/To Jurisdiction Analysis Year Des.(N) Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b>	Seg 5-Bet 2020 Build Plann 0.95 3 0 Level mi 1.2 0.985	2A
Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS	0.95 3 0 Level mi 1.2 0.985	ning Data
Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS	0.95 3 0 Level mi 1.2 0.985	ning Data
%Trucks and Buses, $P_T$ %RVs, $P_R$ General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS	3 0 Level mi 1.2 0.985	
%Trucks and Buses, $P_T$ %RVs, $P_R$ General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS	3 0 Level mi 1.2 0.985	
$E_{R}$ $f_{HV} = 1/[1+P_{T}(E_{T}-1) + P_{R}(E_{R}-1)]$ Calc Speed Adj and FFS	0.985	
$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS	0.985	
$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS		
	S	
f <sub>LW</sub>		
'LW		mph
f <sub>LC</sub> TRD Adjustment		mph
FFS	70.0	mph
Design (N)		
<u>Design (N)</u> Design LOS	··· P	pc/h/ln mph pc/mi/ln
Factor Location		
f <sub>p</sub> - Page 11-18	-13 f -	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-1
	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_{p} = (V \text{ or DDHV}) / (PHF x N x)$ $S$ $D = v_{p} / S$ Required Number of Lanes, N $Factor Location$ $E_{R} - Exhibits 11-10, 11-12$ $E_{T} - Exhibits 11-10, 11-11, 11-14$ $f_{p} - Page 11-18$	Design (N)Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x f_p)$ S $D = v_p / S$ Required Number of Lanes, NFactor Location $E_R - Exhibits 11-10, 11-12$ $E_T - Exhibits 11-10, 11-11, 11-13$

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	RA	MPS AND	RAMP JUN	CTIONS W	ORKSHE	ET			
General Infor	rmation			Site Infor	mation				
Analyst			Fre	eeway/Dir of Tr	avel I-9	95 SB			
Agency or Company	AEC	ОМ	Ju	nction	Se	eg 6-Merge fror	n Hillsboro E&W		
Date Performed			Ju	risdiction					
Analysis Time Perio			An	alysis Year	20	020 Build 2A			
Project Description	SW 10th Stree	t SIMR							
nputs		1							
Jpstream Adj Ramp	1		ber of Lanes, N	3				Downstre	eam Adj
		Ramp Number	r of Lanes, N	1				Ramp	
🗹 Yes 📃 Or	n	Acceleration L	ane Length, L <sub>A</sub>	300				🗌 Yes	🗌 On
No 🗹 Of	ff	Deceleration L	ane Length L <sub>D</sub>						
		Freeway Volu	me, V <sub>r</sub>	3360				✓ No	Off
-up = 2400	ft	Ramp Volume		1470				L <sub>down</sub> =	ft
			-Flow Speed, S <sub>FF</sub>	70.0					
/ <sub>u</sub> = 1210	veh/h	· ·	ow Speed, S <sub>FR</sub>	50.0				V <sub>D</sub> =	veh/h
	a no/h llm		110	50.0					
Conversion t	<u>ο pc/n Une</u> Ι ν		onaitions						
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway	3360	0.95	Level	3	0	0.985	1.00		3590
Ramp	1470	0.92	Level	2	0	0.990	1.00		1614
UpStream	1210	0.92	Level	2	0	0.990	1.00		1328
DownStream									
		Merge Areas		-			Diverge Areas		
Estimation of	f v <sub>12</sub>				Estimatio	on of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )						<u>,                                    </u>	
- <sub>EQ</sub> =			13-6 or 13-7)			•=	V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>		
		, ,	ion (Exhibit 13-6)		L <sub>EQ</sub> =		(Equation 13-		
P <sub>FM</sub> = / -					P <sub>FD</sub> =		using Equatio	n (Exhibit 1	3-7)
/ <sub>12</sub> =	2103		on 13-14 or 13-		V <sub>12</sub> =		pc/h		
$V_3$ or $V_{av34}$	1407	po/ii (Equalio	511 13-14 01 13-		$V_3^{}$ or $V_{av34}^{}$		pc/h (Equation 1	3-14 or 13-	17)
ls V <sub>3</sub> or V <sub>av34</sub> > 2,70	,	s 🗸 No			Is $\rm V_3$ or $\rm V_{av34}$	> 2,700 pc/h? [	Yes 🗌 No		
Is $V_3$ or $V_{av34} > 1.5$					Is $V_3$ or $V_{av34}$	> 1.5 * V <sub>12</sub> /2 [	Yes No		
			on 13-16, 13-		If Yes,V <sub>12a</sub> =		pc/h (Equatior	n 13-16, 1	13-18, or
f Yes,V <sub>12a</sub> =		13-19)			12a	1	3-19)		
Capacity Che	ecks				Capacity	Checks			
	Actual	C	apacity	LOS F?	-	Actual	Cap	pacity	LOS F?
					V <sub>F</sub>		Exhibit 13-8	3	
V <sub>FO</sub>	5204	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub> -	V <sub>R</sub>	Exhibit 13-8	3	
FO	0201						Exhibit 13-		
					V <sub>R</sub>		10		
Flow Entering	g Merge In	fluence A	rea		Flow Ente	ering Dive	rge Influen		3
	Actual	Max	Desirable	Violation?		Actual	Max Desi	rable	Violation?
V <sub>R12</sub>	3717	Exhibit 13-8	4600:All	No	V <sub>12</sub>		Exhibit 13-8		
evel of Serv	vice Detern	nination (i	if not F)		Level of S	Service De	eterminatio	n (if noi	t F)
D <sub>R</sub> = 5.475 +	- 0.00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub> - 0.0	0627 L <sub>A</sub>		D	<sub>R</sub> = 4.252 + 0	0.0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
0 <sub>R</sub> = 31.8 (pc/n	ni/ln)				D <sub>R</sub> = (pc/	/mi/ln)			
.OS = D (Exhibit	13-2)					, hibit 13-2)			
Speed Deteri						eterminatio			
					t '				
M <sub>S</sub> = 0.451 (Ex					ů (	nibit 13-12)			
S <sub>R</sub> = 57.4 mph	(Exhibit 13-11)					(Exhibit 13-12)			
•	(Exhibit 13-11)				ů i	ı (Exhibit 13-12)			
S = 59.7 mph	(Exhibit 13-13)				S = mph	ı (Exhibit 13-13)			
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 7-B 2020 Bu	et On Ramps iild 2A
Project Description SW 10th	n Street SIMR				
✓ Oper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	4830	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
			Up/Down %		
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width		ft	£		mph
Rt-Side Lat. Clearance Number of Lanes, N	3	ft	f <sub>LW</sub> f <sub>LC</sub>		mph
Total Ramp Density, TRD	5	ramps/mi	'LC TRD Adjustment		mph mph
FFS (measured)	70.0	mph	FFS	70.0	
Base free-flow Speed, BFFS	70.0	mph		70.0	mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS		pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ $S$ $D = v_p / S$ Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fro	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11
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Job: SW 10th Street SIMR Analyst: AECOM

Location:	Seg 8: I-	95 South	bound On-Ram	p from SW 1	0th Street E	EB & WB
Analysis Period:	PM Peak	Hour				
Analysis Year:	2020 Bui	ld 3				
4,830			● 6,010			<b>`</b>
			P 0,010			
1 100						>
1,180						
	PHF =	0.95				
	v <sub>fr</sub> =	6,010	vph			
	v <sub>r</sub> =	1,180	vph			
	v <sub>f</sub> =	4,830				
Upstream Freeway	Tr % =	3%				
Ramp	Tr % =	2%				
Downstream Freeway						
Freeway	f <sub>HV</sub> =	1/(1+P	r(E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	·1)) =	0.985	
Ramp	f <sub>HV</sub> =	1/(1+P	r(E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	-1)) =	0.9901	
flat terrain	<b>Ε</b> <sub>τ</sub> =	1.5				
	RV % =	0				
Driver Population adj.	f <sub>P</sub> =	1.000				
	V <sub>fr</sub> =	=v <sub>fr</sub> /(PF	HF)(f <sub>H∨</sub> )(f <sub>P</sub> ) =	6,421	pc/h	
			$(f_{HV})(f_{P}) =$	1,255	pc/h	
			$ F\rangle(f_{HV})(f_{P}) =$	5,160	pc/h	
No. lanes upstream of ramp	•	3		•,•••	P.9/11	

<u>No. Ln</u>	Capacity Check (see Exhibits 25-3 and 25-7):	Maximum	Actual	V/c	LOS F?
4	Fwy downstream of ramp (assume 70 mph free-flow speed) =	9,600	6,421	0.67	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	5,160	0.72	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,255	0.60	No

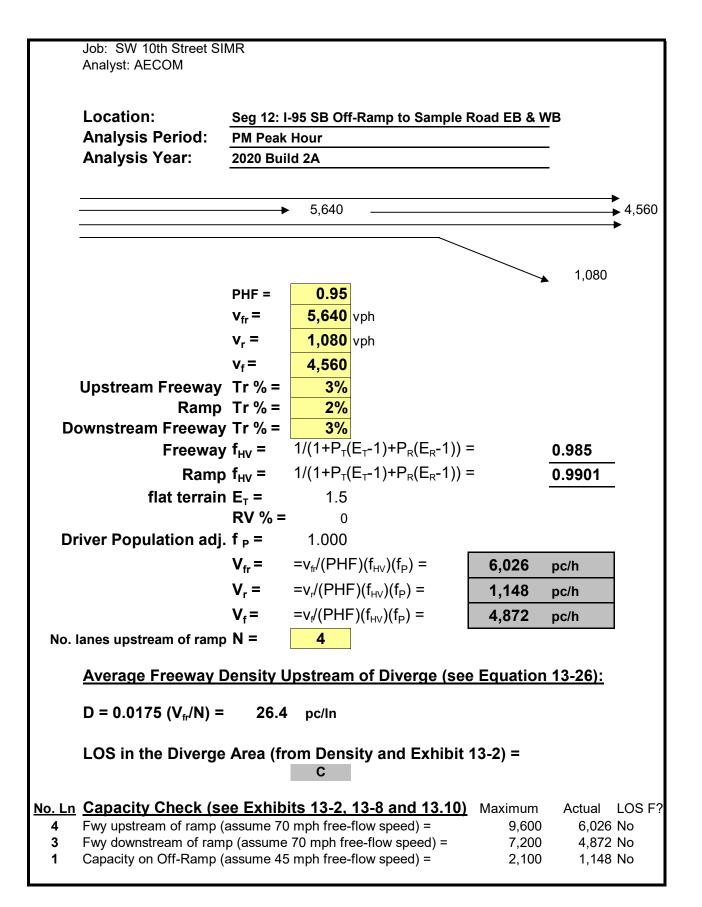
Site Information Highway/Direction of Travel From/To Jurisdiction Analysis Year s.(N) Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % E <sub>R</sub> $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS $f_{LC}$ TRD Adjustment	2020 Build 2020 Build Plan 0.95 3 0 Level mi 1.2 0.985	t 10th & Exit to Exp d 2A nning Data
From/To Jurisdiction Analysis Year s.(N) Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b> $f_{LW}$ $f_{LC}$	Seg 9-Bei 2020 Build Plan 0.95 3 0 Level mi 1.2 0.985	nning Data
Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b> $f_{LW}$ $f_{LC}$	0.95 3 0 Level mi 1.2 0.985	mph
Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b> $f_{LW}$ $f_{LC}$	0.95 3 0 Level mi 1.2 0.985	mph
%Trucks and Buses, $P_T$ %RVs, $P_R$ General Terrain: Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b> $f_{LW}$ $f_{LC}$	3 0 Level mi 1.2 0.985	
Grade % Length Up/Down % $E_R$ $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ <b>Calc Speed Adj and FFS</b> $f_{LW}$ $f_{LC}$	mi 1.2 0.985	
$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS $f_{LW}$ $f_{LC}$	0.985	
$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS $f_{LW}$ $f_{LC}$	0.985	
Calc Speed Adj and FFS f <sub>LW</sub> f <sub>LC</sub>		
f <sub>LW</sub> f <sub>LC</sub>	6	
f <sub>LC</sub>		
FFS	70.0	mph mph
<b>-</b>		
$D = v_p / S$	··· F	pc/h/ln mph pc/mi/ln
Factor Location		
E <sub>T</sub> - Exhibits 11-10, 11-11, 11- F <sub>p</sub> - Page 11-18	-13	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-17
	S D = v <sub>p</sub> / S Required Number of Lanes, N Factor Location E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18	S D = $v_p / S$ Required Number of Lanes, N Factor Location E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13

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		RAI		RAMP JUN	CTIONS W	ORKSHE	ET				
Genera	l Infori	nation			Site Infor	mation					
Analyst				Fre	eeway/Dir of Tr	avel I-	-95 SB				
gency or C		AECO	DM		nction	S	Seg 10-	Merge fron	n Ex to GP		
ate Perfori		514			risdiction						
Analysis Tin		PM SW 10th Stree		Ar	alysis Year	2	2020 Bu	IIId 2A			
nputs	сприон										
			Freeway Num	ber of Lanes, N	4					<b>_</b>	A 11
Jpstream A	dj Ramp		Ramp Numbe		1					Downstre Ramp	eam Adj
Yes	🗌 On			ane Length, $L_{\Delta}$	600					-	
				Lane Length L <sub>D</sub>	000					✓ Yes	🗌 On
✓ No	Off Off			с D	6010					🗌 No	Off
=	ft		Freeway Volu		6010					L <sub>down</sub> =	1150 ft
up =			Ramp Volume	i v	300					down	1100 11
/ <sub>u</sub> =	veh/h		-	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	670 veh/h
				ow Speed, S <sub>FR</sub>	50.0						
Conver	sion to	o pc/h Und V	der Base	Conditions	1	1	<u> </u>				
(pc/l	h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	н∨	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway		6010	0.95	Level	3	0	0.9	85	1.00		6421
Ramp		300	0.92	Level	2	0	0.9	90	1.00		329
UpStream											
DownStrea	m	670	0.92	Level	2	0	0.9		1.00		736
- 41	lian of	<u> </u>	Merge Areas			<b>F</b> atimatic			verge Areas		
Estimat		v <sub>12</sub>				Estimatio		V 12			
		$V_{12} = V_{F}$	( P <sub>FM</sub> )					V <sub>12</sub> = V	/ <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> )	)P <sub>ED</sub>	
EQ =		(Equa	ation 13-6 o	r 13-7)		L <sub>EQ</sub> =			Equation 13-		13)
P <sub>FM</sub> =		0.177	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		•	' sing Equatio		
′ <sub>12</sub> =		1134 p	oc/h			V <sub>12</sub> =			c/h	,	,
$V_3$ or $V_{av34}$			oc/h (Equati	on 13-14 or 13-		$V_3^{12}$ or $V_{av34}^{12}$			c/h (Equation 1	3-14 or 13-	17)
	> 2 700	17) ) pc/h? 🛄 Yes					, > 2.70		Yes No		/
									Yes No		
		V <sub>12</sub> /2		on 13-16, 13-			1	- 12'	c/h (Equation	n 13-16, 1	13-18, or
Yes,V <sub>12a</sub> =	=	2300 µ 18, or		011 13-10, 13-		If Yes,V <sub>12a</sub> =			-19)		
Capacit	ty Che		/			Capacity	Che	ecks			
		Actual	0	apacity	LOS F?			Actual	Cap	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-8	3	
V <sub>F</sub>	_	6750	Exhibit 13-8		No	$V_{FO} = V_{F}$ -	· V <sub>R</sub>		Exhibit 13-8	3	
F	0					V <sub>R</sub>			Exhibit 13-	-	
									10		
-low Er	ntering	Merge In	1			Flow Ent	1	-	ge Influen		
		Actual	î r	Desirable	Violation?	V	A	ctual	Max Desi	rable	Violation?
V <sub>R1</sub>		2897	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8	<i></i>	
		ce Detern		,					erminatio		(F)
		0.00734 v <sub>R</sub> + 0	1.0078 V <sub>12</sub> - 0.1	UUDZI LA					0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
	4.2 (pc/mi						c/mi/ln	-			
	(Exhibit 1	,					xhibit <sup>·</sup>				
Speed L	Determ	nination				Speed D	etern	ninatio	n		
1 <sub>S</sub> = 0.	.332 (Exib	oit 13-11)				D <sub>s</sub> = (Ex	hibit 13	8-12)			
-		Exhibit 13-11)				S <sub>R</sub> = mpl	h (Exhi	bit 13-12)			
		, Exhibit 13-11)					h (Exhi	bit 13-12)			
		Exhibit 13-13)				S = mpl	h (Exhi	bit 13-13)			
		f Florida, All Righ	nts Reserved			HCS2010 <sup>™</sup>				Generat	ed: 6/17/2020

			S AND RAM			RKS	HEET			
General Info	rmation			Site Infor						
Analyst				eeway/Dir of Tr		I-95 SB				
gency or Company	y AECO	MC		nction		Seg 11	- Diverge t	o Express		
ate Performed nalysis Time Peric	od PM			risdiction alysis Year		2020 B				
Project Description		t SIMR		aiysis i cai		2020 D				
nputs										
		Freeway Num	ber of Lanes, N	4					<b></b>	A 11
Upstream Adj I	Ramp	Ramp Number		1					Downstrea Ramp	m Adj
✓ Yes	✓ On			I					•	
			ane Length, L <sub>A</sub>						🗌 Yes	🗌 On
No	Off		ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	6310						
L <sub>up</sub> = 1	150 ft	Ramp Volume	, V <sub>R</sub>	670					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
V <sub>u</sub> = 3	00 veh/h	Ramp Free-Fl	ow Speed, S <sub>FR</sub>	45.0					v <sub>D</sub> –	ven/m
Conversion	to pc/h Un	-								
	V			0/ <b>T</b> au ala	0/ D		f	f		vf vf
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	× <sub>HV</sub> × <sub>p</sub>
reeway	6310	0.95	Level	3	0	0.	985	1.00	674	42
Ramp	670	0.92	Level	2	0	0.	990	1.00	73	6
JpStream	300	0.92	Level	2	0	0.	990	1.00	32	9
ownStream										
		Merge Areas				-		Diverge Areas		
stimation o	of v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	$V_{12} = V_{F}$	( P <sub>FM</sub> )					V <sub>12</sub> =	· V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	<sub>R</sub> )P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13)	)
-~ FM =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		0.	436 using Equ	uation (Exhi	oit 13-7)
12 =	pc/h		,		V <sub>12</sub> =			355 pc/h	,	,
$V_{3}$ or $V_{av34}$	•	Equation 13	-14 or 13-17)		$V_3^{12}$ or $V_{av34}^{12}$			693 pc/h (Equ	ation 13-14	or 13-17
s V <sub>3</sub> or V <sub>av34</sub> > 2,7						> 2 7		⊇Yes ☑No		
av34 2,1										
e\/or\/ >15						34 - 1.0		Yes 🗹 No		18 or 13
s V <sub>3</sub> or V <sub>av34</sub> > 1.5			-16 13-18 or			-	r	noth (Equation	13-16 13-	
0 0.01		Equation 13-	-16, 13-18, or		lf Yes,V <sub>12a</sub> =	-	ې 1	oc/h (Equation 9)	13-16, 13-	10, 01 10
Yes,V <sub>12a</sub> =	pc/h ( 13-19)	Equation 13-	-16, 13-18, or			=	1	· ·	13-16, 13-	
Yes,V <sub>12a</sub> =	pc/h ( 13-19)	Equation 13-	-16, 13-18, or apacity	LOS F?	If Yes,V <sub>12a</sub> =	=	1	9)	13-16, 13-	
s V <sub>3</sub> or V <sub>av34</sub> > 1.5 Yes,V <sub>12a</sub> = <b>Capacity Ch</b> o	pc/h ( 13-19) <b>ecks</b>	Equation 13-		LOS F?	If Yes,V <sub>12a</sub> =	=	i: ecks	9)	pacity	
Yes,V <sub>12a</sub> = Capacity Cho	pc/h ( 13-19) <b>ecks</b>	Equation 13-		LOS F?	If Yes,V <sub>12a</sub> = Capacit	y Che	1 ecks Actual 6742	9) Ca Exhibit 13-6	pacity 9600	LOS F No
Yes,V <sub>12a</sub> =	pc/h ( 13-19) <b>ecks</b>	Equation 13-		LOS F?	If Yes, $V_{12a} =$ Capacit $V_F$ $V_{FO} = V_F$	y Che	1 ecks Actual 6742 6006	9) Ca Exhibit 13-8 Exhibit 13-8	pacity 3 9600 3 9600	LOS F No No
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub>	pc/h ( 13-19) ecks Actual	Equation 13-	apacity	LOS F?	If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$	<b>y Che</b>	1: Actual 6742 6006 736	9) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1	pacity 3 9600 3 9600 0 2100	LOS F No
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub>	pc/h ( 13-19) ecks Actual	Equation 13- C Exhibit 13-8	apacity		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$	y Che	1 2 2 2 2 2 2 2 2 2 2 2 2 2	9) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 r <b>ge Influen</b>	pacity 3 9600 3 9600 0 2100 <b>Ce Area</b>	LOS F No No
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub>	pc/h ( 13-19) ecks Actual	Equation 13- C Exhibit 13-8	apacity	LOS F? Violation?	If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow En</b>	y Che	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9) Ca Exhibit 13-6 Exhibit 13-6 Exhibit 13-1 rge Influen Max Desirab	pacity       3     9600       3     9600       0     2100	LOS F No No Violation
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub> Flow Enterin	pc/h ( 13-19) ecks Actual	Equation 13- C Exhibit 13-8 Ifluence A Max I Exhibit 13-8	apacity I <b>rea</b> Desirable		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow En</b> $V_{12}$	y Che	11 2 CKS Actual 6742 6006 736 736 <b>g Dive</b> Actual 355	9) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 <b>rge Influen</b> Max Desirat Exhibit 13-8	pacity       3     9600       3     9600       3     9600       0     2100       Ce Area       ole     4400:All	LOS F No No Violation No
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub> Flow Enterin V <sub>R12</sub> evel of Serv	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b>	= y Che - V <sub>R</sub> - V	1: Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>vice De</b>	9) Ca Exhibit 13-6 Exhibit 13-6 Exhibit 13-1 rge Influen Max Desirat Exhibit 13-8 termination	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes,V <sub>12a</sub> = Capacity Cho V <sub>FO</sub>	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b>	= y Che - V <sub>R</sub> - V	1: Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>vice De</b>	9) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 <b>rge Influen</b> Max Desirat Exhibit 13-8	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes,V <sub>12a</sub> = Capacity Cho $V_{FO}$ Flow Enterin $V_{R12}$ evel of Serv $D_R = 5.475 + 0$	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern 0.00734 v <sub>R</sub> +	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a}$ = <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow En</b> $V_{12}$ <b>Level of</b>	= y Che - V <sub>R</sub> - V	Actual       6742       6006       736 <b>g Dive</b> Actual       3355 <b>rice De</b> .252 + 0	9) Ca Exhibit 13-6 Exhibit 13-6 Exhibit 13-1 rge Influen Max Desirat Exhibit 13-8 termination	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
$V_{FO}$ Flow Enterin $V_{R12}$ Evel of Served of Served (pc/mi/light)	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern 0.00734 v <sub>R</sub> + 1 n)	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b> $D_R = 3^2$	<b>y Che</b> <b>y Che</b> <b>terin</b> <b>f Serv</b> D <sub>R</sub> = 4 4.2 (pc/	Actual       6742       6006       736 <b>g Dive</b> Actual       3355 <b>rice De</b> .252 + 0	9) Ca Exhibit 13-6 Exhibit 13-6 Exhibit 13-1 rge Influen Max Desirat Exhibit 13-8 termination	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes,V <sub>12a</sub> = Capacity Cho $V_{FO}$ Flow Enterin $V_{R12}$ evel of Serve $D_R = 5.475 + Control R_R = (pc/mi/lit)$	pc/h ( 13-19) ecks Actual ag Merge In Actual b.00734 v <sub>R</sub> + 1 0.00734 v <sub>R</sub> + 1 13-2)	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b> $D_R = 3^2$	$\frac{1}{2} - V_R$ $\frac{1}{2} - V_R$ $\frac{1}{2}$ $\frac{1}{3}$ $$	1: Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>rice De</b> .252 + 0 'mi/In) bit 13-2)	9) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 <b>rge Influen</b> Max Desirat Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes, $V_{12a}$ = <b>Capacity Ch</b> $V_{FO}$ Flow Enterin $V_{R12}$ <b>Evel of Ser</b> $D_R$ = 5.475 + C $R^{=}$ (pc/mi/li DS = (Exhibit <b>Speed Deter</b>	pc/h ( 13-19) ecks Actual ag Merge In Actual Actual vice Detern 0.00734 v <sub>R</sub> + 1 n) 13-2) mination	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a}$ = <b>Capacit</b> $V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b> $D_R = 3^2$ LOS = D <b>Speed L</b>	<b>y Che</b> <b>y Che</b> <b>terin</b> <b>f Serv</b> D <sub>R</sub> = 4 4.2 (pc/ (Exhik <b>Detern</b>	1 Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>vice De</b> .252 + 0 'mi/ln) bit 13-2) <b>minatic</b>	9) Ca Exhibit 13-6 Exhibit 13-6 Exhibit 13-1 rge Influen Max Desirat Exhibit 13-8 termination .0086 V <sub>12</sub> - 0.	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ble 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes, $V_{12a}$ = Capacity Characteristic $V_{FO}$ Flow Enterin $V_{R12}$ evel of Serve $D_R$ = 5.475 + 0 $R^{=}$ (pc/mi/loos = (Exhibit Cos = (Exhibit)	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern 0.00734 v <sub>R</sub> + 1 n) 13-11)	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F$ $V_FO = V_F$ $V_R$ <b>Flow En</b> $V_{12}$ <b>Level of</b> $D_R = 34$ LOS = D <b>Speed L</b> $D_s = 0.$	$\frac{1}{2} - V_R$ $\frac{1}{2} - V_R$ $\frac{1}{2}$ $$	11 Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>rice De</b> .252 + 0 'mi/ln) bit 13-2) <b>minatic</b> xhibit 13-	29) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 <b>rge Influen</b> Max Desirat Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ole 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes, $V_{12a}$ = Capacity Characterized $V_{FO}$ Flow Enterine $V_{R12}$ evel of Servent $D_R$ = 5.475 + 0 R = (pc/mi/line) OS = (Exhibit for the servent of the	pc/h ( 13-19) ecks Actual ag Merge In Actual Actual vice Detern 0.00734 v <sub>R</sub> + h n) t 13-2) cmination 13-11) thibit 13-11)	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> <b>V</b> <sub>FO</sub> = V <sub>F</sub> V <sub>FO</sub> = V <sub>F</sub> V <sub>R</sub> <b>Flow Er</b> <b>D</b> <sub>R</sub> = 34 LOS = D <b>Speed L</b> D <sub>s</sub> = 0. S <sub>R</sub> = 59	<b>y Che</b> <b>y Che</b> <b>y Che</b> <b>y Che</b> <b>y</b> <b>terin</b> <b>f</b> <b>f</b> <b>f</b> <b>f</b> <b>f</b> <b>f</b> <b>f</b> <b>f</b>	Actual           6742           6006           736 <b>g Dive</b> Actual           355           vice De           .252 + 0           'mi/In)           bit 13-2)           minatic           xhibit 13-           (Exhibit 13-	29) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 rge Influen Max Desirat Exhibit 13-8 termination .0086 V <sub>12</sub> - 0.	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ole 4400:All <b>n (if not l</b>	LOS F No No Violation No
Yes,V <sub>12a</sub> = Capacity Cha $V_{FO}$ Flow Enterin $V_{R12}$ evel of Serve $D_R = 5.475 + O_R$ $P_R = (pc/mi/lin)$ $D_S = (Exhibit)$ $D_S = (Exhibit)$ $D_R = (Exhibit)$ $D_R = mph (Exhibit)$ $D_R = mph (Exhibit)$	pc/h ( 13-19) ecks Actual og Merge In Actual vice Detern 0.00734 v <sub>R</sub> + 1 n) 13-11)	Equation 13- C Exhibit 13-8 fluence A Max I Exhibit 13-8 nination (i	apacity Irea Desirable if not F)		If Yes, $V_{12a} =$ <b>Capacit</b> $V_F = V_F$ $V_{FO} = V_F$ $V_R$ <b>Flow Er</b> $V_{12}$ <b>Level of</b> $D_R = 3^2$ LOS = D Speed I $D_s = 0$ . $S_R = 59$ $S_0 = 7^2$	$\frac{1}{2} - V_R$ $\frac{1}{2} - V_R$ $\frac{1}{2}$ $$	11 Actual 6742 6006 736 <b>g Dive</b> Actual 355 <b>rice De</b> .252 + 0 'mi/ln) bit 13-2) <b>minatic</b> xhibit 13-	29) Ca Exhibit 13-8 Exhibit 13-8 Exhibit 13-1 <b>rge Influen</b> Max Desirat Exhibit 13-8 <b>termination</b> .0086 V <sub>12</sub> - 0.	pacity 3 9600 3 9600 0 2100 <b>ce Area</b> ole 4400:All <b>n (if not l</b>	LOS F No No Violation No



General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 13-L 2020 Bu	Bet Off & On Ramps ild 2A
Project Description SW 10th	h Street SIMR				
🗹 Oper.(LOS)			Des.(N)	🗌 Pla	inning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	4560	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	\$	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N : S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1624 67.9 23.9 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre	-	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2		f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-17

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			REEWA	Y WEAV		_			
Genera	al Informati	on			Site Info	rmation			
Analyst Agency/C Date Perfo Analysis T		AECO PM	М		Freeway/Dir Weaving Seg Analysis Yea	gment Locati		B 4- Bet Sampl Build 2A	e & Copans
Project De Inputs	escription SW 10t	h Street SIMF	2						
Weaving o Weaving r Weaving s	configuration number of lanes, l segment length, L ree-flow speed, F	S		One-Sided 4 2520ft 70 mph	Segment typ Freeway min Freeway ma: Terrain type	imum speed			Freewa 240 Lev
Conve	rsions to p	I		1	1				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	3915	0.95	3	0	1.5	1.2	0.985	1.00	4183
V <sub>RF</sub>	1380	0.92	2	0	1.5	1.2	0.990	1.00	1515
V <sub>FR</sub>	645	0.92	2	0	1.5	1.2	0.990	1.00	708
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0
V <sub>NW</sub>	4183				-		-	V =	6406
V <sub>W</sub>	2223								-
VR	0.347								
Config	uration Cha	aracteris	tics						
Minimum	maneuver lanes,	N <sub>WL</sub>		2 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>		2223 lc
Interchan	ge density, ID			0.7 int/mi	Weaving lan	e changes, L	.C <sub>w</sub>		2672 lc
Minimum	RF lane changes	, LC <sub>rf</sub>		1 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		1457 lc
Minimum	FR lane changes	, LC <sub>FR</sub>		1 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		4129 lc
Minimum	RR lane changes	, LC <sub>RR</sub>		lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		73
Weavi	ng Segmen	t Speed,	Density,	Level of	Service,	and Cap	oacity		
Weaving	segment flow rate	e, V		6323 veh/h	Weaving inte	ensity factor,	W		0.33
Weaving	segment capacity	, c <sub>w</sub>		6814 veh/h		gment speed			49.3 mp
Weaving	segment v/c ratio			0.928	-	aving speed,			56.2 mp
•	segment density,	D	3	2.5 pc/mi/ln	Average nor				46.3 mp
Level of S	Service, LOS			D	Maximum w	eaving length	n, L <sub>MAX</sub>		6094
Notes		h			- 4 4 · · ·		and disc		
Chapter 13	segments longer t , "Freeway Merge	and Diverge Se	egments".	•		solated merge	and diverge are	eas using the	procedures of
	mes that exceed the ersity of Florida, All	0 0		ne level of se		0 <sup>TM</sup> Version		Conor	ated: 6/17/20

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General In	formation			Site Infor						
Analyst Agency or Comp Date Performed Analysis Time Pe	-	ОМ	Ju Ju	reeway/Dir of Tr unction urisdiction nalysis Year			Express L W 10th Co			
÷	ion SW 10th Stree	et SIMR	7.1			2020 D				
Inputs										
Upstream A	dj Ramp	Freeway Num Ramp Number	per of Lanes, N	2					Downstrea Ramp	am Adj
Yes	On		ane Length, L <sub>A</sub>	· ·					Yes	On
🗹 No	Off	Deceleration L Freeway Volur	ane Length L <sub>D</sub>	345 1240					✓ No	Off
L <sub>up</sub> =	ft	Ramp Volume	, V <sub>R</sub>	1240					L <sub>down</sub> =	ft
V <sub>u</sub> =	veh/h		Flow Speed, S <sub>FF</sub> ow Speed, S <sub>FR</sub>	70.0 60.0					V <sub>D</sub> =	veh/h
Conversio	n to pc/h Un									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1240	0.95	Level	3	0	0.	985	1.00	13	25
Ramp	180	0.95	Level	2	0	0.	990	1.00	1	91
UpStream										
DownStream		Morgo Aroas					I	iverge Areas		
Estimation		Merge Areas			Estimat	ion o		iverge Areas		
		(D)								
	$V_{12} = V_F$		10 7)				•=	$V_{R} + (V_{F} - V_{R})$		<b>`</b>
-EQ =		ation 13-6 or	-		L <sub>EQ</sub> =		-	Equation 13-1		-
P <sub>FM</sub> =	-	Equation (E	XIIIDIL 13-0)		P <sub>FD</sub> =			)00 using Equ	ation (Exh	DIL 13-7)
$l_{12} = l_{12}$	pc/h	Equation 12	14 or 13-17)		V <sub>12</sub> = V <sub>3</sub> or V <sub>av34</sub>			25 pc/h	m 12 11 a	40 47)
/ <sub>3</sub> or V <sub>av34</sub>	2,700 pc/h? Ye		14 01 13-17)			<u>\</u> 27		pc/h (Equatio ]Yes	11 13-14 01	13-17)
• • • • •	1.5 * V <sub>12</sub> /2 <b>Ye</b>							Yes VNO		
$Ves, V_{12a} =$		Equation 13-	16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	13-16, 13	-18, or 13
Capacity C	Checks	/			Capacit	y Ch		/		
	Actual	С	apacity	LOS F?			Actual	Са	pacity	LOS F
					V <sub>F</sub>		1325	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1134	Exhibit 13-8	4800	No
					V <sub>R</sub>		191	Exhibit 13-10	2200	No
-low Enter	ring Merge Ir	fluence A	rea			nterin	a Diver	ge Influen	ce Area	
	Actual	1	Desirable	Violation?	-		Actual	Max Desirab		Violation
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	1	325	Exhibit 13-8	4400:All	No
	ervice Deterr	nination (i	f not F)		Level of	f Serv	ice De	termination	n (if not	F)
D <sub>R</sub> = 5.475 ·	+ 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0.	0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
<sub>R</sub> = (pc/m	ni/ln)				D <sub>R</sub> = 12	2.5 <b>(pc</b> /	′mi/ln)			
OS = (Exhi	ibit 13-2)				LOS = B	(Exhit	oit 13-2)			
-	ermination				Speed L		,	n		
I <sub>S</sub> = (Exib	it 13-11)				D <sub>s</sub> = 0.	120 <b>(E</b>	xhibit 13-	12)		
	Exhibit 13-11)						(Exhibit	-		
0	Exhibit 13-11) Exhibit 13-13)				Ű		(Exhibit 1 (Exhibit	-		
	University of Florida,		rod		HCS2010 <sup>TM</sup>		-	-	poratad: 6/6/	2021 12:58

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					EET			
ormation			Site Infor					
			eeway/Dir of Tr		I-95 NB Express			
any AEC	,OIVI				On from SW 10t	n St. Connecto	r	
riod AM					2020 Build 2A			
	et SIMR	, ,			2020 Duild 2/1			
mp	Freeway Num!	per of Lanes, N	2				Downstr	aam Adi
шр	Ramp Number	of Lanes, N	1					sani Auj
On			1040					
		- //	1010				L Yes	On
Off		- D	1060				🗹 No	Off
							L <sub>down</sub> =	ft
							down	
h/h	-						V <sub>D</sub> =	veh/h
		1.13	60.0					
	der Base (	Conditions	r	1			1	
· ·	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	IF x f <sub>HV</sub> x f <sub>p</sub>
	0.95	ا میما	3	0				1133
			-	-			_	1191
1120	0.75	Level	Ζ	0	0.990	1.00	_	1171
	Merge Areas					Diverge Areas	S	
of v <sub>12</sub>				Estimat	ion of v <sub>12</sub>			
$V_{12} = V_r$	- (Prm)				V <sub>40</sub> =	: V <sub>D</sub> + (V <sub>F</sub> - \	/_)P	
12 1	1 101	13-7)			12			13)
		-		_		• •		•
								13-7)
		o				•	10.14 10	17)
-		3-14 or 13-17)			0.700 # 0			-17)
		10 10 10		Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 * V <sub>12</sub> /2			10.10
		-16, 13-18, or		If Yes,V <sub>12a</sub> =	:		ion 13-16, 1	13-18, or
hecks	7					10 10)		
				Capacit	v Cnecks			
	C	apacity	1 0S F?	Capacit		(	Capacity	1.0S F?
Actual	Ci	apacity	LOS F?		Actua	1	Capacity 3-8	LOS F?
Actual		apacity		V <sub>F</sub>	Actua	Exhibit 1	3-8	LOS F?
	Exhibit 13-8	apacity	LOS F? No	V <sub>F</sub> V <sub>FO</sub> = V <sub>F</sub>	Actua	Exhibit 1 Exhibit 1	3-8 3-8	LOS F?
Actual		apacity		V <sub>F</sub>	Actua	Exhibit 1	3-8 3-8	LOS F?
Actual 2324	Exhibit 13-8	· · ·		$\frac{V_{F}}{V_{FO} = V_{F}}$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10	3-8 3-8 1 <b>3-</b>	
Actual	Exhibit 13-8	· · ·		$\frac{V_{F}}{V_{FO} = V_{F}}$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe	3-8 3-8 1 <b>3-</b>	
Actual 2324 ing Merge In	Exhibit 13-8	rea	No	V <sub>F</sub> V <sub>FO</sub> = V <sub>F</sub> V <sub>R</sub> Flow En	- V <sub>R</sub>	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe	3-8 3-8 13- ence Area esirable	a.
Actual 2324 ing Merge In Actual 2459	Exhibit 13-8 nfluence A Max E Exhibit 13-8	<b>rea</b> Desirable 4600:All	No Violation?	$\frac{V_{F}}{V_{FO} = V_{F}}$ $\frac{V_{FO} = V_{F}}{V_{R}}$ $Flow En$ $V_{12}$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Do Exhibit 13-8	3-8 3-8 13- ence Area esirable	a Violation?
Actual 2324 ing Merge Ir Actual 2459 ervice Deterr	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Dr Exhibit 13-8 Eterminat	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 ing Merge In Actual 2459 ervice Detern 5 + 0.00734 v <sub>R</sub> +	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Dr Exhibit 13-8 Eterminat	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 ing Merge In Actual 2459 ervice Detern 5 + 0.00734 v <sub>R</sub> + c/mi/ln)	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow End $V_{12}$ Level of $D_R = (p$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Dr Exhibit 13-8 Eterminat	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation
Actual 2324 2324 2324 Actual 2459 2459 2459 2459 2459 2459 2459 2459	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ $Flow En$ $V_{12}$ $Level of$ $D_R = (p$ $LOS = (E$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Di Exhibit 13-8 eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 ing Merge In Actual 2459 ervice Detern 5 + 0.00734 v <sub>R</sub> + c/mi/ln)	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = (p$ $LOS = (E$ Speed L	Actua - $V_R$ - $V$	Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max Di Exhibit 13-8 eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 2324 Actual 2459 2459 2459 2459 2459 2459 2459 2459	Exhibit 13-8 nfluence A Max I Exhibit 13-8 mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ $Flow En$ $V_{12}$ $Level of$ $D_R = (p$ $LOS = (E$ $Speed L$ $D_S = (E$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 2324 Actual 2459 Ervice Detern 5 + 0.00734 v <sub>R</sub> + c/mi/ln) ibit 13-2) Ermination	Exhibit 13-8 <b>Influence A</b> Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ $Flow En$ $V_{12}$ $Level of$ $I$ $D_R = (p$ $LOS = (E$ $Speed L$ $D_S = (E$ $S_R = m$	Actua - $V_R$ - $V$	Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
Actual 2324 2324 2324 2459 2459 2459 2459 2459 2459 2459 24	Exhibit 13-8 <b>Influence A</b> Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	$V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ $Flow En$ $V_{12}$ $Level of$ $I$ $D_R = (p$ $LOS = (E$ $Speed L$ $D_S = (E$ $S_R = m$	Actua	Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 13-8 Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 13- ence Area esirable 3 ion (if no	a Violation?
	riod         AM           in         SW 10th Street           mp         On           Off $V$ h/h         V           in         to pc/h Un           in         V           (Veh/hr)         1060           1120         V           0         V           (Veh/hr)         1060           1120         V           0         V12           V12 = VF         (Equ           1.000         1133           0         pc,           2,700 pc/h? $\Box$ Ye         5 * V12/2 $\Box$ Ye	riod AM n SW 10th Street SIMR mp Freeway Number On Acceleration La Off Deceleration La Off Deceleration La Freeway Volume, Ramp Volume, Freeway Volume, Ramp Volume, Freeway Volume, Ramp Volume, Freeway Volume, Ramp Volume, Freeway Volume, Ramp Volume, PHF 1060 0.95 1120 0.95 1120 0.95 Merge Areas Of $v_{12}$ $v_{12} = V_F (P_{FM})$ (Equation 13-6 or 1.000 using Equati 1133 pc/h 0 pc/h (Equation 1 2,700 pc/h? □ Yes ☑ No .5 * $V_{12}/2$ □ Yes ☑ No	any AECOM Ju Ju Ju Ju Ju Ju Ju Ju Ju Ju	any AECOM Junction riod AM Analysis Year m SW 10th Street SIMR The second street SIMR Street SIMR Street SIMR The second street SIMR Street SIMR Street SIMR The second street SIMR Street SIME STREET STREE	any AECOM Junction Jurisdiction Amalysis Year m SW 10th Street SIMR The SW 10th Street Simple Street Str	any AECOM Junction On from SW 10t Jurisdiction Jurisdiction Jurisdiction riod AM Analysis Year 2020 Build 2A m SW 10th Street SIMR The system of Lanes, N 2 Ramp Number of Lanes, N 1 On Acceleration Lane Length, L <sub>A</sub> 1040 Off Deceleration Lane Length L <sub>D</sub> Freeway Volume, V <sub>F</sub> 1060 Ramp Volume, V <sub>R</sub> 1120 h/h Freeway Free-Flow Speed, S <sub>FF</sub> 70.0 Ramp Free-Flow Speed, S <sub>FF</sub> 70.0 Ramp Free-Flow Speed, S <sub>FF</sub> 60.0 To pc/h Under Base Conditions V (Veh/hr) PHF Terrain %Truck %RV $f_{HV}$ 1060 0.95 Level 3 0 0.985 1120 0.95 Level 3 0 0.985 1120 0.95 Level 2 0 0.990 Merge Areas of V <sub>12</sub> V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> ) (Equation 13-6 or 13-7) 1.000 using Equation (Exhibit 13-6) 1133 pc/h 0 pc/h (Equation 13-14 or 13-17) P.700 pc/h? Yes No 5*V <sub>12</sub> /2 Yes V o 15V <sub>3</sub> or V <sub>av34</sub> > 1.5*V <sub>12</sub> /2 Fyec V o Fyec V o	any AECOM Junction Jurisdiction riod AM Analysis Year 2020 Build 2A on SW 10th Street SIMR The served Number of Lanes, N 2 Ramp Number of Lanes, N 2 Ramp Number of Lanes, N 1 On Acceleration Lane Length, L <sub>A</sub> 1040 Off Deceleration Lane Length L <sub>D</sub> Freeway Volume, V <sub>F</sub> 1060 Ramp Volume, V <sub>R</sub> 1120 Freeway Volume, V <sub>R</sub> 1120 h/h Ramp Free-Flow Speed, S <sub>FF</sub> 70.0 Ramp Free-Flow Speed, S <sub>FF</sub> 60.0 <b>1 to pc/h Under Base Conditions</b> V (Veh/hr) PHF Terrain %Truck %Rv $f_{HV}$ $f_p$ 1060 0.95 Level 3 0 0.985 1.00 1120 0.95 Level 3 0 0.985 1.00 1120 0.95 Level 2 0 0.990 1.00 V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> ) (Equation 13-6 or 13-7) 1.000 using Equation (Exhibit 13-6) 1133 pc/h V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> ) C/00 pc/h (Equation 13-14 or 13-17) C,700 pc/h? Yes No 5 * V <sub>12</sub> 2 Yes No 5 * V <sub>12</sub> 2 Yes No pc/h (Equation 13-16, 13-18, or Ker V (Ker V)	any AECOM Junction On from SW 10th St. Connector Jurisdiction Jurisdiction AM Analysis Year 2020 Build 2A $\$ n SW 10th Street SIMR 2020 Build 2A $\$ mp Freeway Number of Lanes, N 2 mp Ramp Number of Lanes, N 1 On Acceleration Lane Length, L <sub>A</sub> 1040 $\square$ Yes $\square$ No Acceleration Lane Length, L <sub>A</sub> 1040 $\square$ Yes $\square$ No Freeway Volume, V <sub>F</sub> 1060 Ramp Volume, V <sub>F</sub> 1060 Ramp Volume, V <sub>R</sub> 1120 $\square$ Volume, V <sub>D</sub> = $\$ h/h Freeway Free-Flow Speed, S <sub>FF</sub> 70.0 n to pc/h Under Base Conditions $\$ V (veh/hr) PHF Terrain $\%$ Truck $\%$ Rv $f_{Hv}$ $f_p$ V = V/PH 1060 0.95 Level 3 0 0.985 1.00 $\square$ 1120 0.95 Level 2 0 0.990 1.00 $\square$ Merge Areas Diverge Areas $\$ Oiverge Areas $\$ V <sub>12</sub> = V <sub>F</sub> (V <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub> (Equation 13-6 or 13-7) 1.000 using Equation (Exhibit 13-6) 1133 pc/h 0 pc/h (Equation 13-14 or 13-17) .700 pc/h? $\square$ Yes $\square$ No 5' V <sub>12</sub> $\square$ Yes $\square$ No Free $\square$ No $\square$ So $V_{12} = V_{F}$ (Equation 13-16, 13-18, or $\square$ SV $\square$ S

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		RAMP	S AND RAN	IP JUNCTI	ONS WC	RKS	HEET			
General In	formation			Site Infor	mation					
Analyst Agency or Comp Date Performed Analysis Time Pe		ОМ	ال ال	reeway/Dir of Tr unction urisdiction nalysis Year	avel		Express L W 10th Co			
÷	on SW 10th Stree	et SIMR				2020 D				
nputs										
Upstream A	dj Ramp	Freeway Num Ramp Number	ber of Lanes, N	2					Downstre Ramp	am Adj
Yes	On	· ·	ane Length, L <sub>A</sub>	I					Yes	On
🗹 No	Off	Deceleration L Freeway Volur	ane Length L <sub>D</sub>	250 1110					✓ No	Off
L <sub>up</sub> =	ft	Ramp Volume	, V <sub>R</sub>	510					L <sub>down</sub> =	ft
V <sub>u</sub> =	veh/h		-Flow Speed, S <sub>FF</sub> ow Speed, S <sub>FR</sub>	70.0 60.0					V <sub>D</sub> =	veh/h
Conversio	n to pc/h Un									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>H∨</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1110	0.95	Level	3	0	0.	985	1.00	1	186
Ramp	510	0.95	Level	2	0	0.	990	1.00	5	42
UpStream										
DownStream		Merge Areas						iverge Areas		
Estimation		Merye Areas			Estimat	tion o		iverye Areas		
		(D)			Lotinat			<u> </u>		
	$V_{12} = V_F$		10 7)				•=	$V_R + (V_F - V_F)$	5	
EQ =		ation 13-6 or	-		L <sub>EQ</sub> =		-	Equation 13-1		-
P <sub>FM</sub> =	-	Equation (E	XNIDIL 13-6)		P <sub>FD</sub> =			000 using Equ	iation (Exh	idit 13-7)
$l_{12} =$	pc/h	Equation 12	14 12 17)		$V_{12} =$			86 pc/h	10.11	40.47)
$V_3$ or $V_{av34}$	2,700 pc/h? 🗌 Ye		-14 or 13-17)		$V_3$ or $V_{av34}$	<u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		pc/h (Equatio ] Yes	n 13-14 0	r 13-17)
$f Yes, V_{12a} =$	1.5 * V <sub>12</sub> /2	Equation 13-	-16, 13-18, or		If Yes,V <sub>12a</sub> =		. –	Yes	13-16, 13	-18, or 13-
Capacity C		1			Capacit	ty Che		1		
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F
					V <sub>F</sub>		1186	Exhibit 13-8	4800	No
V <sub>FO</sub>		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	644	Exhibit 13-8	4800	No
					V <sub>R</sub>		542	Exhibit 13-10	) 2200	No
-low Enter	ring Merge Ir	nfluence A	rea		ł –		a Diver	ge Influen	ce Area	<b>I</b>
	Actual	Ť.	Desirable	Violation?		ii .	Actual	Max Desirab		Violation
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	1	186	Exhibit 13-8	4400:All	No
	ervice Deterr	nination (i	if not F)		Level of	f Serv	vice De	termination	n (if not	<del>.</del> F)
D <sub>R</sub> = 5.475 ·	+ 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0.	0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
<sub>R</sub> = (pc/m	ni/ln)				D <sub>R</sub> = 12	2.2 (pc/	ˈmi/ln)			
	bit 13-2)					(Exhib	oit 13-2)			
Speed Det	ermination				Speed I	Deter	minatio	n		
l <sub>S</sub> = (Exib	it 13-11)				D <sub>s</sub> = 0.	.152 <b>(E</b> :	xhibit 13-	12)		
	Exhibit 13-11)					-	(Exhibit	-		
	Exhibit 13-11) Exhibit 13-13)				Ŭ		(Exhibit 1 (Exhibit	-		
	Jniversity of Florida,		rod		HCS2010 <sup>TM</sup>		-		perated: 6/6/	2021 10:46

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	RA	MPS AND	RAMP JUN	CTIONS W	/ORKSH	EET				
General In		_		Site Infor						
Analyst Agency or Comp Date Performed Analysis Time Pe	pany AE	COM	Ju Ju	reeway/Dir of Tr unction urisdiction nalysis Year	avel	On fro	B Express I om SW 10th Build 2A	anes St. Connector		
	on SW 10th Stre	et SIMR		, ,						
nputs										
Jpstream Adj Ra	amp	Freeway Numb Ramp Number		2 1					Downstre Ramp	am Adj
Yes	] On	Acceleration L	ane Length, L <sub>A</sub>	1100					Yes	On
✓ No	] Off	Deceleration L Freeway Volur	- 0	600					🗹 No	Off
<sub>up</sub> = ft		Ramp Volume	V <sub>R</sub>	330					L <sub>down</sub> =	ft
v <sub>u</sub> = ve	≽h/h	Freeway Free- Ramp Free-Flo	Flow Speed, S <sub>FF</sub> w Speed, S <sub>FR</sub>	70.0 60.0					V <sub>D</sub> =	veh/h
Conversio	n to pc/h Ur	nder Base (	Conditions						•	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway	600	0.95	Level	3	0	(	).985	1.00		641
Ramp JpStream	330	0.95	Level	2	0	(	0.990	1.00		351
DownStream										
		Merge Areas						Diverge Areas		
Estimation	1 of V <sub>12</sub>				Estimat	ion	of $v_{12}$			
EQ = FM =	1.000	uation 13-6 or using Equati	13-7) on (Exhibit 13-6)	)	L <sub>EQ</sub> = P <sub>FD</sub> =			V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> (Equation 13 using Equatio	-12 or 13-	-
0 4101	2,700 pc/h? <b>Y</b> 1.5 * V <sub>12</sub> /2 <b>Y</b> pc/h	/h (Equation 1 es	3-14 or 13-17) -16, 13-18, or	)		<sub>34</sub> > 1.	700 pc/h? [ 5 * V <sub>12</sub> /2 [	pc/h pc/h (Equation ] Yes ] No ] Yes ] No pc/h (Equatio	•	
	13-19	9)						3-19)		
Capacity C	1				Capacit	y Ci				
	Actual		apacity	LOS F?	V <sub>F</sub>		Actual	Exhibit 13		LOS F?
$V_{FO}$	992	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>		Exhibit 13 Exhibit 13		
								10		
-low Enter	ring Merge I			1	Flow En	<u>iteri</u>		rge Influe		-
V <sub>R12</sub>	Actual 1068	Max L Exhibit 13-8	Desirable 4600:All	Violation? No	V <sub>12</sub>	+	Actual	Max Des Exhibit 13-8	sirable	Violation?
	ervice Deter					f Sei	rvice De	terminatio	n (if no	f <b>F</b> ]
D <sub>R</sub> = 5.47	75 + 0.00734 v <sub>R</sub> + c/mi/ln)		,				4.252 + 0	.0086 V <sub>12</sub> - 0		
.OS = A (Exh	nibit 13-2)				LOS = (E	Exhib	it 13-2)			
Speed Det	ermination				Speed L	Dete	rminatio	on		
0	(Exibit 13-11)	N			3 .		13-12) (hibit 13-12)			
6 <sub>0</sub> = N/A m	nph (Exhibit 13-11) ph (Exhibit 13-11)				S <sub>0</sub> = m	ph (E)	(hibit 13-12)			
	nph (Exhibit 13-13) Jniversity of Florida,				S = m HCS2010 <sup>TM</sup>	-	(hibit 13-13)		Concreted: (	6/2021 10:58

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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General In	formation			Site Infor						
Analyst Agency or Comp Date Performed	-	OM	Ju Ju	reeway/Dir of Tr unction urisdiction		Off to S	Express L W 10th Co			
Analysis Time P			A	nalysis Year		2020 B	uild 2A			
-	ion SW 10th Stree	et SIMR								
nputs		Erooway Num	ber of Lanes, N	2				ĺ		
Upstream A	Adj Ramp	Ramp Number		2					Downstrea Ramp	am Adj
Yes	On		ane Length, $L_{\Delta}$	I						
	_		ane Length L <sub>D</sub>	245					Yes	On
✓ No	Off	Freeway Volur	- D	345 1040					🗹 No	Off
L <sub>up</sub> =	ft	Ramp Volume		1040 390					L <sub>down</sub> =	ft
up			, V <sub>R</sub> Flow Speed, S <sub>FF</sub>	590 70.0						
V <sub>u</sub> =	veh/h	-		70.0 60.0					V <sub>D</sub> =	veh/h
Conversio			ow Speed, S <sub>FR</sub>	00.0						
	n to pc/h Un			1	1	<u> </u>				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>H∨</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1040	0.95	Level	3	0	0.	985	1.00	11	11
Ramp	390	0.95	Level	2	0	0.	990	1.00	4	15
UpStream						_				
DownStream		Merge Areas					I	iverge Areas		
Estimatior		merge meas			Estimat	ion o		iverge nicus		
	V <sub>12</sub> = V <sub>F</sub>	(P)						V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P	
_		ation 13-6 or	13_7)		L _			Equation 13-1		)
EQ = P <sub>FM</sub> =		Equation (E	-		L <sub>EQ</sub> = P -		-	00 using Equ		-
FM - / <sub>12</sub> =	pc/h				P <sub>FD</sub> = V <sub>12</sub> =			11 pc/h		bit 13-7)
$V_3$ or V <sub>av34</sub>	•	Faultion 13.	-14 or 13-17)		$V_{12}^{-}$ V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13 14 o	13 17)
	2,700 pc/h? Ye					>27		Yes ⊠No	11 13-14 01	13-17)
	1.5 * V <sub>12</sub> /2 <b>Ye</b>							Yes VNO		
0 4101			-16, 13-18, or					c/h (Equation	13-16, 13	-18, or 13-
Yes,V <sub>12a</sub> =	13-19		-,,		If Yes,V <sub>12a</sub> =		19		, -	-, -
Capacity (		n'		u	Capacit	y Ch	ecks	u		
	Actual	С	apacity	LOS F?			Actual		pacity	LOS F
					V <sub>F</sub>		1111	Exhibit 13-8	_	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	696	Exhibit 13-8	4800	No
					V <sub>R</sub>		415	Exhibit 13-10	2200	No
-low Ente	ring Merge Ir	1			Flow Er			ge Influen		
	Actual	1	Desirable	Violation?	<u> </u>		Actual	Max Desirab		Violation
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		111	Exhibit 13-8	4400:All	No
	ervice Deteri				1			termination		F)
	+ 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>					0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
) <sub>R</sub> = (pc/n	-					0.7 <b>(pc</b> /				
-	ibit 13-2)						oit 13-2)			
Speed Det	termination				Speed L					
A <sub>S</sub> = (Exib	oit 13-11)				Ŭ,	•	xhibit 13-			
S <sub>R</sub> = mph (	(Exhibit 13-11)						(Exhibit	-		
$S_0 = mph$ (	(Exhibit 13-11)				l °		(Exhibit 1	-		
S = mph (	Exhibit 13-13)				S = 60	6.1 mph	(Exhibit	13-13)		
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		<u> </u>	MPS AND	<u>RAMP JUN</u>	<u>CTIONS N</u>	<u>/ORKSHI</u>	EET			
Genera	l Inforn	nation			Site Infor	mation				
nalyst gency or ( ate Perfor		AEC	OM	Ju	reeway/Dir of Tr unction urisdiction		I-95 NB Expr On from SW	ess Lanes 10th St. Connect	ior	
	me Period	PM		Ai	nalysis Year		2020 Build 2	A		
	scription S	SW 10th Stree	et SIMR							
nputs				61 N						
Ipstream A	Adj Ramp		Freeway Numb		2					ream Adj
Yes	On		Ramp Number		1				Ramp	
_ 163			Acceleration La	- 11	1040				Yes	On
✓ No	Off		Deceleration L	- D					✓ No	Off
			Freeway Volun		650					
up =	ft		Ramp Volume,	IX .	580				L <sub>down</sub> =	ft
′ <sub>u</sub> =	veh/h			Flow Speed, $S_{FF}$	70.0				V <sub>D</sub> =	veh/h
			Ramp Free-Flo		60.0					
Conver	sion to		der Base (	Conditions			-			
(pc/	′h)	V (Voh/br)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/P	HF x f <sub>HV</sub> x f <sub>p</sub>
reeway		(Veh/hr) 650	0.95	Level	3	0	0.985	1.00	_	694
Ramp		580	0.95	Level	2	0	0.990	1.00		617
JpStream		000	0.70	Lovoi			0.770	1.00		017
DownStrea	ım									
			Merge Areas					Diverge Are	as	
stimat	tion of	v <sub>12</sub>				Estimat	ion of v <sub>1</sub>	2		
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )				V <sub>1</sub>	<sub>12</sub> = V <sub>R</sub> + (V <sub>F</sub> -	V <sub>R</sub> )P <sub>FD</sub>	
EQ =		(Equ	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation	13-12 or 13	3-13)
FM =		1.000	using Equati	on (Exhibit 13-6)	)	P <sub>FD</sub> =		using Equ	ation (Exhibi	t 13-7)
12 =		694 p	oc/h			V <sub>12</sub> =		pc/h		
3 or V <sub>av34</sub>		0 pc/	h (Equation 1	3-14 or 13-17)	)	$V_3$ or $V_{av34}$		pc/h (Equati	on 13-14 or 1	3-17)
	<sub>v34</sub> > 2,700	pc/h? 🗌 Ye	s 🗹 No			Is $V_3$ or $V_{av}$	<sub>34</sub> > 2,700 pc	/h? 🗌 Yes 🔲	No	
s $V_3$ or $V_{a_1}$	<sub>v34</sub> > 1.5 * \	/ <sub>12</sub> /2 □Ye	es 🗹 No					/2 🗌 Yes 🗌		
Yes,V <sub>12a</sub>		pc/h	(Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equa	ation 13-16,	, 13-18, or
-		13-19	)					13-19)		
apach	ty Chec					Capacit	y Check		0 "	100 50
		Actual		apacity	LOS F?	V	AC	tual Evhibit	Capacity	LOS F?
						V <sub>F</sub>		Exhibit		
V <sub>F</sub>	0	1311	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub>	- v <sub>R</sub>	Exhibit		
						V <sub>R</sub>		Exhibit 10		
	nterina	Merae Ir	nfluence A	rea		Flow En	terina D	iverge Influ		 a
1011 21		Actual		Desirable	Violation?		Actual		Desirable	Violation?
V <sub>R1</sub>	12	1394	Exhibit 13-8	4600:All	No	V <sub>12</sub>		Exhibit 13		
		ce Deteri	nination (i				<sup>-</sup> Service	Determina		ot F)
			0.0078 V <sub>12</sub> - 0.0	,		1		2 + 0.0086 V <sub>12</sub>		,
	.9 (pc/mi/ln		12	A			oc/mi/ln)	12	D	
	(Exhibit 1						Exhibit 13-2	2)		
		-						-		
speea I		ination					Determin	all011		
	.212 (Exibi	t 13-11)				$D_s = (E$	xhibit 13-12)			
0	-	-				c	/	1 1 1 1		
<sub>R</sub> = 6	4.1 mph (E	xhibit 13-11)					ph (Exhibit 13			
<sub>R</sub> = 6 <sub>0</sub> = N	4.1 mph (E I/A mph (E	-				S <sub>0</sub> = m	ph (Exhibit 13 ph (Exhibit 13 ph (Exhibit 13	3-12)		

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		RAMP	S AND RAN	IP JUNCTI	ONS WO	RKS	HEET			
General In	formation			Site Infor						
Analyst Agency or Comp Date Performed	-	ОМ	ال ال	reeway/Dir of Tr unction urisdiction		Off to S	Express La W 10th Co			
Analysis Time P	eriod PM ion SW 10th Stree		A	nalysis Year		2020 B	uild 2A			
Inputs										
-		Freeway Num	ber of Lanes, N	2					-	
Upstream A	Adj Ramp	Ramp Number		1					Downstrea Ramp	im Adj
Yes	On	· ·	ane Length, $L_{A}$							
			ane Length $L_{D}$	250					Yes	On
✓ No	Off	Freeway Volu	- 0	1970					🗹 No	Off
L <sub>up</sub> =	ft	Ramp Volume		760					L <sub>down</sub> =	ft
·			Flow Speed, S <sub>FF</sub>	70.0						
V <sub>u</sub> =	veh/h		ow Speed, S <sub>FR</sub>	60.0					V <sub>D</sub> =	veh/h
Conversio	n to pc/h Un									
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	xf xf
	(Veh/hr)	<b>↓</b>				_		F		···· F
Freeway Ramp	1970 760	0.95	Level	3	0	_	985 990	1.00 1.00	21	
UpStream	760	0.95	Level	2	0	0.	990	1.00	00	0
DownStream										
		Merge Areas				_		iverge Areas		
Estimation	1 of v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	$V_{12} = V_F$	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>FD</sub>	
EQ =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(E	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (E	xhibit 13-6)		P <sub>FD</sub> =		1.0	00 using Equ	uation (Exhi	bit 13-7)
/ <sub>12</sub> =	pc/h				V <sub>12</sub> =		21	05 <b>pc/h</b>		
$V_3$ or $V_{av34}$			-14 or 13-17)		$V_3$ or $V_{av34}$			pc/h (Equatio	n 13-14 or	13-17)
	2,700 pc/h? 🗌 Ye							Yes 🗹 No		
Is $V_3$ or $V_{av34} >$	1.5 * V <sub>12</sub> /2 <b>Ye</b>		10 10 10		Is $V_3$ or $V_{av}$	<sub>34</sub> > 1.5		Yes 🗹 No	10.10.10	40 40
f Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	p 19	c/h (Equation	13-16, 13-	18, or 13-
Capacity C	/				Capacit	y Ch		1		
	Actual	С	apacity	LOS F?		-	Actual	Ca	pacity	LOS F?
					V <sub>F</sub>		2105	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	1297	Exhibit 13-8	4800	No
					V <sub>R</sub>		808	Exhibit 13-10	) 2200	No
-low Enter	ring Merge In	fluence A	rea	•			q Diver	ge Influen	ce Area	•
	Actual	1	Desirable	Violation?			Actual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	2	105	Exhibit 13-8	4400:All	No
Level of Se	ervice Deterr	nination (i	f not F)		Level of	f Serv	ice De	termination	n (if not i	F)
D <sub>R</sub> = 5.475	+ 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0.	0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
0 <sub>R</sub> = (pc/n	ni/In)				D <sub>R</sub> = 20	0.1 <b>(pc</b> /	′mi/ln)			
.0S = (Exhi	ibit 13-2)				LOS = C	(Exhil	oit 13-2)			
Speed Det	ermination				Speed L	Deter	minatio	n		
M <sub>S</sub> = (Exib	oit 13-11)				D <sub>s</sub> = 0.	176 <b>(E</b>	xhibit 13-	12)		
-	Exhibit 13-11)				S <sub>R</sub> = 65	5.1 mph	(Exhibit	13-12)		
	Exhibit 13-11)				S <sub>0</sub> = N	/A mph	(Exhibit 1	3-12)		
	Exhibit 13-13)				S = 65	5.1 mph	(Exhibit	13-13)		
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y AEC	UM				UN TROM SW 10t	n St. Connecto	Γ	
nd PM					2020 Build 2A			
	et SIMR	, ,			2020 Duild 2/1			
	Freeway Numb	er of Lanes, N	2				Downotr	om Adi
þ	-							ani Auj
Dn	1 ·							
		- //	1100				∐ Yes	On
ſf		- D	1010				🗹 No	Off
							L <sub>down</sub> =	ft
							down	
′h							V <sub>D</sub> =	veh/h
			60.0					
	<u>der Base (</u>	Conditions	1	1				
	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	0.95		3	0				1293
				-	-		+	181
170	0.75	Level	2	0	0.770	1.00	+	101
	Merge Areas					Diverge Areas	5	
of v <sub>12</sub>				Estimat	ion of v <sub>12</sub>			
$V_{12} = V_{\Gamma}$	(P <sub>FM</sub> )				V <sub>40</sub> =	: V <sub>D</sub> + (V <sub>F</sub> - \	/_)P	
12 1	1 101	13-7)			12			13)
		-		_		• •		,
								13-7)
						•	10.14	17)
-		3-14 or 13-17)			0.700 // 0			17)
		10 10 10		Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 <sup>^</sup> V <sub>12</sub> /2			10.10
pc/n 13-19		-16, 13-18, or		If Yes, V <sub>12a</sub> =	:	pc/n (Equat 13-19)	ion 13-16, 7	13-18, or
	<u>)                                    </u>				v Checks			
ecks	,	apacity	LOS F?		y Checks Actua		Capacity	LOS F?
	,	apacity	LOS F?	Capacit	y Checks Actua	, I (	Capacity 3-8	LOS F?
Actual	Ca	apacity		Capacit	Actua	I C Exhibit 1	3-8	LOS F?
ecks	,	apacity	LOS F? No	Capacit $V_F$ $V_{FO} = V_F$	Actua	I C Exhibit 1 Exhibit 1	3-8 3-8	LOS F?
Actual	Ca	apacity		Capacit	Actua	I C Exhibit 1	3-8 3-8	LOS F?
Actual	Ca Exhibit 13-8			$Capacit$ $V_{F}$ $V_{FO} = V_{F}$ $V_{R}$	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10	3-8 3-8 3-	
Actual	Exhibit 13-8			Capacit V <sub>F</sub> V <sub>F0</sub> = V <sub>F</sub> V <sub>R</sub> Flow En	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe	3-8 3-8 3-	
ecks Actual 1474 ng Merge Ir	Exhibit 13-8	rea	No	Capacit V <sub>F</sub> V <sub>F0</sub> = V <sub>F</sub> V <sub>R</sub> Flow En	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe	3-8 3-8 3-8 3-8 3-8 3-8 3-8 20 20 20 20 20 20 20 20 20 20 20 20 20	a.
Actual 1474 Actual 1474 Actual 1629	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8	<b>rea</b> Desirable 4600:All	No Violation?	Capacit $V_F$ $V_{FO} = V_F$ $V_R$ Flow En	Actua	Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 1 Exhibit 13-8	3-8 3-8 3-8 3-8 3-8 3- 3- 8 8 8 8	a Violation
ecks Actual Actu	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_F$ $V_{FO} = V_F$ $V_R$ Flow En V <sub>12</sub> Level of	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max De Exhibit 13-8 Eterminat	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
ecks Actual 1474 1474 Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> +	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max De Exhibit 13-8 Eterminat	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
ecks Actual 1474 1474 Actual 1629 vice Detern + 0.00734 v <sub>R</sub> + mi/ln)	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_F$ $V_{FO} = V_F$ $V_{R}$ Flow En $V_{12}$ Level of $D_R = (p)$	Actua	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max De Exhibit 13-8 Eterminat	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation'
ecks Actual Actual 1474 Actual Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> + mi/ln) it 13-2)	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_F$ $V_F = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = (p$ LOS = (E	Actua - V <sub>R</sub> - V <sub>R</sub> Actual - V <sub>R</sub> - V <sub>R</sub>	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max De Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation'
ecks Actual Actual 1474 Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> + 1 mi/ln) it 13-2) Timination	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = (p)$ LOS = (E)Speed L	Actua - $V_R$ - $V$	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Erge Influe Max De Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
ecks Actual Actual 1474 Actual Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> + mi/ln) it 13-2)	Exhibit 13-8 Exhibit 13-8 Influence A Max E Exhibit 13-8 Mination (i	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_{FO} = V_F$ $V_{FO} = V_F$ $V_R$ Flow En $V_{12}$ Level of $D_R = (p)$ LOS = (E)Speed L $D_S = (E)$	Actua - $V_R$ Actual Actual F Service D $D_R = 4.252 + 0$ $D_R = 1.20 + $	I C Exhibit 1 Exhibit 1 Exhibit 1 10 Exhibit 1 Exhibit 13-8 Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
ecks Actual Actual 1474 Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> + 1 mi/ln) it 13-2) Timination	Ca Exhibit 13-8 Influence A Max E Exhibit 13-8 Inination (i 0.0078 V <sub>12</sub> - 0.0	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_{FO} = V_F$ $V_{FO} = V_F$ $V_{R}$ Flow En $V_{12}$ Level of $D_R = (p)$ LOS = (E)Speed D $S_R = (p)$	Actua - $V_R$ - $V$	Exhibit 1     Exhibit 1     Exhibit 1     Exhibit 1     Exhibit 1     To     Exhibit 1     To     Exhibit 13-8     Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
ecks Actual Actual 1474 Actual Actual Actual 1629 Vice Detern + 0.00734 v <sub>R</sub> + + mi/ln) it 13-2) mination xibit 13-11)	Ca Exhibit 13-8 Influence A Max E Exhibit 13-8 Inination (i 0.0078 V <sub>12</sub> - 0.0	<b>rea</b> Desirable 4600:All <b>f not F</b> J	No Violation?	Capacit $V_{FO} = V_F$ $V_{FO} = V_F$ $V_{R}$ Flow En $V_{12}$ Level of $D_R = (p)$ LOS = (E)Speed D $S_R = (p)$	Actua - $V_R$ Actual Actual F Service D $D_R = 4.252 + 0$ $D_R = 1.20 + $	Exhibit 1     Exhibit 1     Exhibit 1     Exhibit 1     Exhibit 1     To     Exhibit 1     To     Exhibit 13-8     Eterminati 0.0086 V <sub>12</sub> -	3-8 3-8 3-8 3- ence Area esirable ion (if no	a Violation
	$\frac{\text{pd} \qquad \text{PM}}{\text{SW 10th Streed}}$ $\frac{\text{SW 10th Streed}}{\text{pp}}$ $\frac{\text{for } pc/h \ Un}{\text{ff}}$ $\frac{\text{for } pc/h \ Un}{1210}$ $\frac{\text{for } v_{12}}{1210}$ $\frac{\text{for } v_{12}}{1210}$ $\frac{\text{for } v_{12}}{120}$	bd       PM         SW 10th Street SIMR         Freeway Number         Ramp Number         P       Acceleration La         Deceleration La       Deceleration La         Deceleration La       Deceleration La         M       Freeway Volum         Ramp Volume,       Freeway Volum         Ramp Volume,       Freeway Free-         N       Ramp Free-Flocton La         Merge Areas         V       VHF         1210       0.95         170       0.95         170       0.95         170       0.95         0       V12 = V <sub>F</sub> (P <sub>FM</sub> )         (Equation 13-6 or       1.000         1.000       using Equati         1293       pc/h         0       pc/h (Equation 1         '00 pc/h?       Yes         Yon pc/h (Equation 13-6       1	Ju ad PM Ar SW 10th Street SIMR p Freeway Number of Lanes, N Ramp Number of Lanes, N Acceleration Lane Length, L <sub>A</sub> Deceleration Lane Length, L <sub>A</sub> Deceleration Lane Length, L <sub>A</sub> Freeway Volume, V <sub>F</sub> Ramp Volume, V <sub>R</sub> Freeway Free-Flow Speed, S <sub>FR</sub> to pc/h Under Base Conditions V (Veh/hr) PHF Terrain 1210 0.95 Level 170 0.95 Level 170 0.95 Level 170 0.95 Level 5f $v_{12}$ V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> ) (Equation 13-6 or 13-7) 1.000 using Equation (Exhibit 13-6) 1293 pc/h 0 pc/h (Equation 13-14 or 13-17) 100 pc/h? ☐ Yes ⊠ No pc/h (Equation 13-16, 13-18, or	Jurisdiction         Analysis Year         SW 10th Street SIMR         p       Freeway Number of Lanes, N       2         Ramp Number of Lanes, N       1         In       Acceleration Lane Length, L <sub>A</sub> 1100         off       Deceleration Lane Length, L <sub>A</sub> 1100         Off       Preeway Volume, V <sub>F</sub> 1210         Ramp Volume, V <sub>R</sub> 170       Freeway Free-Flow Speed, S <sub>FF</sub> 70.0         h       Freeway Free-Flow Speed, S <sub>FR</sub> 60.0       60.0         to pc/h Under Base Conditions       V       V       PHF       Terrain       % Truck         1210       0.95       Level       3       1         Merge Areas       D       Merge Areas       D         of v <sub>12</sub> V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> )       (Equation 13-6 or 13-7)       1.000       using Equation (Exhibit 13-6)         1293       pc/h       0       pc/h (Equation 13-14 or 13-17)       000 pc/h (Equation 13-14 or 13-17)         00       pc/h (Equation 13-16, 13-18, or       pc/h (Equation 13-16, 13-18, or	Jurisdiction       Jurisdiction         analysis Year       SW 10th Street SIMR         p       Freeway Number of Lanes, N       2         p       Ramp Number of Lanes, N       1         p       Ramp Volume, V <sub>R</sub> 1210         Ramp Volume, V <sub>R</sub> 170       Freeway Free-Flow Speed, S <sub>FF</sub> 70.0         Ramp Free-Flow Speed, S <sub>FR</sub> 60.0       60.0       60.0         to pc/h Under Base Conditions         V       V(veh/hr)       PHF       Terrain       %Truck       %Rv         1210       0.95       Level       3       0       170       0.95       Level       2       0         Merge Areas       Merge Areas       Merge Areas       56       V12       Estimat         V12       V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> )       (Equation 13-6 or 13-7)       L <sub>EQ</sub> =       P <sub>FD</sub> =         1.000       using Equation (Exhibit 13-6)       P <sub>FD</sub> =       0       y <sub>3</sub> or V <sub>av34</sub> 100 pc/h?       Yes ⊠ No       Is V <sub>3</sub> or V <sub>av3</sub> Is V <sub>3</sub> or V <sub>av44</sub> 100 pc	Jurisdiction       Jurisdiction         pd       PM       Analysis Year       2020 Build 2A         SW 10th Street SIMR         2         p       Freeway Number of Lanes, N       2         Ramp Number of Lanes, N       1          m       Acceleration Lane Length, L <sub>A</sub> 1100         off       Deceleration Lane Length L <sub>D</sub> Freeway Volume, V <sub>F</sub> 1210       Ramp Volume, V <sub>R</sub> 170         Ramp Volume, V <sub>R</sub> 170           Freeway Free-Flow Speed, S <sub>FF</sub> 70.0           n       Acceleration Sectonditions           V       PHF       Terrain       %Truck       %Rv       f <sub>HV</sub> 1210       0.95       Level       3       0       0.985         170       0.95       Level       2       0       0.990         Merge Areas         of v <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> )         (Equation 13-6 or 13-7)       Level       2       0       0.990         Level       2       0       0.990         Merge Areas         of v <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> )	Jurisdiction       Jurisdiction         sw 10th Street SIMR       2020 Build 2A         p       Freeway Number of Lanes, N       2         p       Ramp Number of Lanes, N       1         n       Acceleration Lane Length, L <sub>A</sub> 1100         off       Deceleration Lane Length L <sub>D</sub> Freeway Volume, V <sub>F</sub> 1210         Ramp Volume, V <sub>R</sub> 170       Freeway Free-Flow Speed, S <sub>FF</sub> 70.0         h       Freeway Free-Flow Speed, S <sub>FF</sub> 60.0       60.0         to pc/h Under Base Conditions       5       1.00       1.00         1210       0.95       Level       3       0       0.985       1.00         170       0.95       Level       3       0       0.985       1.00         170       0.95       Level       2       0       0.990       1.00 <td>Jurisdiction       Jurisdiction         SW 10th Street SIMR       2020 Build 2A         SW 10th Street SIMR       Downstreet         p       Freeway Number of Lanes, N       2         p       Ramp Number of Lanes, N       1         m       Acceleration Lane Length, L<sub>A</sub>       1100         off       Deceleration Lane Length L<sub>D</sub>       Yes         Freeway Volume, V<sub>F</sub>       1210       Volume, V<sub>R</sub>         Ramp Volume, V<sub>R</sub>       170       Volume, V<sub>R</sub>         h       Freeway Free-Flow Speed, S<sub>FF</sub>       70.0         k       Freeway Free-Flow Speed, S<sub>FF</sub>       60.0         to pc/h Under Base Conditions       V       PHF       Terrain       % Truck       % Rv       f<sub>HV</sub>       f<sub>p</sub>       v = V/PH         1210       0.95       Level       3       0       0.985       1.00         170       0.95       Level       2       0       0.990       1.00         Merge Areas       Diverge Areas       Diverge Areas       Diverge Areas         of v<sub>12</sub>       V<sub>F</sub> (P<sub>FM</sub>)       V<sub>12</sub>       V<sub>12</sub>       V<sub>R</sub> (P<sub>r</sub> - V<sub>R</sub>)P<sub>FD</sub>         (Equation 13-14 or 13-17)       V<sub>12</sub>       pc/h       V<sub>12</sub>       pc/h         1000 pc/h?&lt;</td>	Jurisdiction       Jurisdiction         SW 10th Street SIMR       2020 Build 2A         SW 10th Street SIMR       Downstreet         p       Freeway Number of Lanes, N       2         p       Ramp Number of Lanes, N       1         m       Acceleration Lane Length, L <sub>A</sub> 1100         off       Deceleration Lane Length L <sub>D</sub> Yes         Freeway Volume, V <sub>F</sub> 1210       Volume, V <sub>R</sub> Ramp Volume, V <sub>R</sub> 170       Volume, V <sub>R</sub> h       Freeway Free-Flow Speed, S <sub>FF</sub> 70.0         k       Freeway Free-Flow Speed, S <sub>FF</sub> 60.0         to pc/h Under Base Conditions       V       PHF       Terrain       % Truck       % Rv       f <sub>HV</sub> f <sub>p</sub> v = V/PH         1210       0.95       Level       3       0       0.985       1.00         170       0.95       Level       2       0       0.990       1.00         Merge Areas       Diverge Areas       Diverge Areas       Diverge Areas         of v <sub>12</sub> V <sub>F</sub> (P <sub>FM</sub> )       V <sub>12</sub> V <sub>12</sub> V <sub>R</sub> (P <sub>r</sub> - V <sub>R</sub> )P <sub>FD</sub> (Equation 13-14 or 13-17)       V <sub>12</sub> pc/h       V <sub>12</sub> pc/h         1000 pc/h?<

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				RAMP JUN								
General	Inforn	nation			Site Infor							
Analyst Agency or Company AECOM Date Performed Analysis Time Period AM			Ju	reeway/Dir of Tr unction urisdiction	avel I-95 NB CD N. of Hillsboro Blvd.							
			A	2020 Build 2A								
	cription S	W 10th Stree	et SIMR									
nputs			1									
pstream Adj Ramp Ramp Number of Lanes, N				N 2 1					Downstr Ramp	eam Adj		
Yes	🗌 On	Acceleration Lane Length, L			890					Yes	On	
✓ No	Off		Deceleration L	- D							Off	
_	<del>f</del> t		Freeway Volun		1220							
= qu	ft		Ramp Volume,		710					L <sub>down</sub> =	п	
'u =	veh/h	Freeway Free-Flow Speed,			55.0				V <sub>D</sub> = veh/h			
-	-		Ramp Free-Flo		40.0							
convers	sion to		der Base (	conditions	1	<b>.</b>						
(pc/h	1)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/Pł	HF x f <sub>HV</sub> x f <sub>p</sub>	
reeway		1220	0.95	Level	3	0	(	).985	1.00		1303	
Ramp		710	0.95	Level	2	0	(	).990	1.00		755	
JpStream												
)ownStrear	n		Merge Areas					I	verge Area			
stimat	ion of v		morgornous			Estimat	ion		in orgo ra ou			
		$V_{12} = V_{F}$	(P)			<u> </u>			(+()/-)	/ )P		
		12 1	1.001	13_7)		$V_{12} = V_R + (V_F - V_R)P_{FD}$ L <sub>EQ</sub> = (Equation 13-12 or 13-13)						
<sub>EQ</sub> = FM <sup>=</sup>						$P_{FD} =$ using Equation (Exhibit 13-7)						
FM 12 <sup>=</sup>						V <sub>12</sub> =			oc/h		10 /)	
$_{3}^{12}$ or V <sub>av34</sub>				3-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 13-14 or 13-17)						
	a > 2,700	pc/h? Ye			/		ou > 2.		Yes 🗆 N		.,,	
		/ <sub>12</sub> /2 □Ye							∃Yes □N			
Yes,V <sub>12a</sub> =		pc/h	(Equation 13	-16, 13-18, or		f Ves V _ pc/h (Equat					13-18, or	
		13-19	)						3-19)			
Capacit	y Chec					Capacit	y Cl	ń			L	
		Actual		apacity	LOS F?			Actual		Capacity	LOS F?	
						V <sub>F</sub>			Exhibit 1		_	
V <sub>FC</sub>		2058	Exhibit 13-8		No	$V_{FO} = V_{F}$	- v <sub>R</sub>		Exhibit 1 Exhibit 1		_	
						V <sub>R</sub>			10	13-		
low En	terina	Merae Ir	i Influence A	rea	-	Flow Er	nteri	na Divel	rae Influe	ence Are	a	
	Ĭ	Actual		esirable	Violation?			Actual		esirable	Violation?	
V <sub>R1</sub>	2	2058	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8	3		
		ce Deteri	mination (i	f not F)		Level of	f Sei	rvice De	terminat	ion (if no	ot F)	
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$							D <sub>R</sub> =	4.252 + 0	0086 V <sub>12</sub> -	0.009 L <sub>D</sub>		
0 <sub>R</sub> = 15.6 (pc/mi/ln)						D <sub>R</sub> = (pc/mi/ln)						
OS = B (Exhibit 13-2)						LOS = (Exhibit 13-2)						
Speed Determination						Speed Determination						
μ <sub>s</sub> = 0.280 (Exibit 13-11)						$D_s =$ (Exhibit 13-12)						
$B_{R}$ = 51.4 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)							
$B_0 = N/A \text{ mph} (Exhibit 13-11)$					$S_0 = mph$ (Exhibit 13-12)							
0	• •	xhibit 13-13)				-	iph (E>	(hibit 13-13)				
			All Rights Reserve	vd.		HCS2010 <sup>TI</sup>	• •			Generated:	8/26/2021 2:5	

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				RAMP JUN								
	l Inforn	nation			Site Infor							
Analyst Agency or Company AECOM Date Performed Analysis Time Period PM			ОМ	Freeway/Dir of Tra Junction Jurisdiction			avel I-95 NB CD N. of Hillsboro Blvd.					
				A	2020 Build 2A							
	scription S	W 10th Stree	et SIMR									
nputs			1									
pstream Adj Ramp Ramp Number of Lanes, N				N 2 1					Downstr Ramp	eam Adj		
Yes C		Acceleration Lane Length, L			A 890					Yes	On	
✓ No	Off	Deceleration Lane Length L								✓ No	Off	
= qL	ft Ram Free		Freeway Volun Ramp Volume,		1515 620					L <sub>down</sub> =	ft	
ih			Freeway Free-Flow Speed, S									
u =				amp Free-Flow Speed, S <sub>FF</sub>						V <sub>D</sub> = veh/h		
					40.0							
onver	rsion to	<u>pc/n Un</u>	der Base C	onaitions	1	1						
(pc/	/h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	IF x f <sub>HV</sub> x f <sub>p</sub>	
reeway		1515	0.95	Level	3	0	(	).985	1.00		1619	
lamp		620	0.95	Level	2	0	(	).990	1.00		659	
pStream							_					
ownStrea	am		Merge Areas					[	iverge Areas			
stima	tion of		werge Areas			Estimat	ion		iverge Areas	5		
ouma		12				Lotimat				( ) >		
		$V_{12} = V_{F}$	1 101	40.7)		$V_{12} = V_R + (V_F - V_R)P_{FD}$						
= 0						$L_{EQ}$ = (Equation 13-12 or 13-13) $P_{FD}$ = using Equation (Exhibit 13-7)						
FM =	1.000 using Equation (Exhibit 13-6)					P <sub>FD</sub> =				tion (Exhibit	13-7)	
12 =		1619	•			V <sub>12</sub> =			oc/h			
$_3$ or V $_{av34}$		-		3-14 or 13-17	<b>'</b> )	$V_3 \text{ or } V_{av34}$ pc/h (Equation 13-14 or 13-17) Is $V_3 \text{ or } V_{av34} > 2,700$ pc/h? $\Box$ Yes $\Box$ No						
		pc/h? 🗌 Ye										
s $V_3$ or $V_a$	<sub>v34</sub> > 1.5 * \	/ <sub>12</sub> /2 □Ye		10 10 10		Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ If Vec V = pc/h (Equation 13-16, 13-18, or						
Yes,V <sub>12a</sub>	=	pc/n 13-19		-16, 13-18, or		If Yes,V <sub>12a</sub> =	-		oc/n (Equat 3-19)	ion 13-16,	13-18, of	
apaci	ty Chec		/			Capacit	v Cł		,,			
	<b>,</b>	Actual	Ca	pacity	LOS F?			Actual	(	Capacity	LOS F?	
						V <sub>F</sub>			Exhibit 1			
V		2278	Evhibit 12.0		No	V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>		Exhibit 1	3-8		
V <sub>F</sub>	0	2270	Exhibit 13-8		No		<u> </u>		Exhibit 1			
						V <sub>R</sub>			10			
low E	ntering	Merge Ir	fluence A	rea		Flow Er	nteri	ng Dive	ge Influe	ence Are	а	
		Actual		esirable	Violation?			Actual	Max D	esirable	Violation	
V <sub>R</sub>		2278	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8			
evel o	of Servic	ce Deteri	nination (i	f not F)		1				ion (if no	ot F)	
D <sub>R</sub> :	= 5.475 + 0	.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> - 0.0	0627 L <sub>A</sub>			D <sub>R</sub> =	4.252 + 0	0086 V <sub>12</sub> -	0.009 L <sub>D</sub>		
P <sub>R</sub> = 17.4 (pc/mi/ln)						D <sub>R</sub> = (pc/mi/ln)						
OS = B (Exhibit 13-2)						LOS = (Exhibit 13-2)						
Speed Determination						Speed Determination						
$h_{\rm S} = 0.288 ({\rm Exibit}13-11)$						D <sub>s</sub> = (Exhibit 13-12)						
$B_{R}$ = 51.3 mph (Exhibit 13-11)					S <sub>R</sub> = mph (Exhibit 13-12)							
$B_0^{-1}$ N/A mph (Exhibit 13-11)					$S_0 = mph$ (Exhibit 13-12)							
S = 51.3  mph (Exhibit 13-13)						S = mph (Exhibit 13-13)						
						1° '''	· · · · · · · · · · · · · · · · · · ·					

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